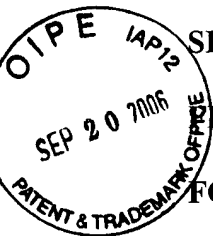


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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: O'Donnell et al. GROUP: 3752
SERIAL NO: 10/800,796 EXAMINER: Patrick Brinson
FILED: March 15, 2004
FOR: ROPE AND WEBBING PROTECTOR



Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF (PATENT APPLICATION--37 CFR 192)

1. Transmitted herewith in triplicate is the APPEAL BRIEF in this application with respect to the Notice of Appeal filed on July 20, 2006. The Appeal Brief includes Attachments 1-6.

NOTE: "The appellant shall, within 2 months from the date of the notice of appeal under 1.191 in an application, reissue application, or patent under reexamination, or within the time allowed for response to the action appealed from, if such time is later, file a brief *in triplicate*." 37 CFR 1.192(a) [emphasis added]

2. STATUS OF APPLICANT

This application is on behalf of

X a small entity

3. FEE FOR FILING APPEAL BRIEF

Pursuant to 37 CFR 1.17(f) the fee for filing the Appeal Brief is:

X small entity \$250.00

— other than a small entity \$500.00

Appeal Brief fee due \$250.00

CERTIFICATE OF MAILING (37 CFR 1.8(a))

I hereby certify that this paper (along with any referred to as being attached or enclosed) is being deposited with the United States Postal Service on September 20, 2006 in an envelope as "Express Mail Post Office to Addressee" Mailing Label Number EV901972072US addressed to the: Commissioner of Patents, P.O. Box 1450 Alexandria, VA 22313-1450

Meghan H. Carr

4. EXTENSION OF TERM

NOTE: The time periods set forth in 37 CFR 1.192(a) are subject to the provision of 1.136 for patent applications. 37 CFR 1.191(d). Also see Notice of November 5, 1985 (1060 O.G. 27).

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136 apply.

(complete (a) or (b) as applicable)

- (a) — Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-d)) for the total number of months checked below:

<u>Extension (months)</u>	<u>Fee for other than small entity</u>	<u>Fee for small entity</u>
— one month	\$120.00	\$60.00
— two months	\$450.00	\$225.00
— three months	\$1,020.00	\$510.00
— four months	\$1,590.00	\$795.00

Fee \$

If an additional extension of time is required please consider this a petition therefor.

(check and complete the next item, if applicable)

- An extension for _____ months has already been secured and the fee paid therefor of \$_____ is deducted from the total fee due for the total months of extension now requested.

Extension fee due with this request \$

or

- (b) X Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

5. TOTAL FEE DUE

The total fee due is:

Appeal brief fee \$250.00

Extension fee (if any) \$

TOTAL FEE DUE: \$250.00

6. FEE PAYMENT

X Attached is a check in the sum of \$250.00

___ Charge Account No. 19-0079 the sum of _____.

A duplicate of this transmittal is attached.

7. FEE DEFICIENCY

NOTE: If there is a fee deficiency and there is no authorization to charge an account, additional fees are necessary to cover the additional time consumed in making up the original deficiency. If the maximum, six month period has expired before the deficiency is noted and corrected, the application is held abandoned. In those instances where authorization to charge is included, processing delays encountered in returning the papers to the PTO Finance Branch in order to apply these charges prior to action on the cases. Authorization to charge the deposit account for any fee deficiency should be checked. See the Notice of April 7, 1986, 1065 O.G. 31-33.

X If any additional extension and/or fee is required, this is a request therefor and to charge Account No. 19-0079.

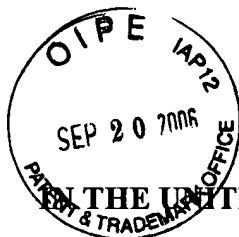
AND/OR

X If any additional fee for claims is required, charge Account No. 19-0079.

Respectfully submitted,



William E. Hilton
Registration No. 35,192
Gauthier & Connors, LLP
225 Franklin Street, Suite 2300
Boston, Massachusetts 02110
Telephone: (617) 426-9180
Extension: 111

**THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of: Mark G. O'Donnell Group No.: 3754
Serial No.: 10/800,796 Examiner: Brinson, Patrick F.
Filed: March 15, 2004
For: ROPE AND WEBBING PROTECTOR

**Mail Stop Appeal Brief- Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450**

Sir:

APPEAL BRIEF

Pursuant to 35 U.S.C. §134 and 37 C.F.R. §§1.191, 1.192, and 1.196, Appellant respectfully appeals to the Board of Patent Appeals and Interferences from the Examiner's final rejection of claims 37-53.

I. REAL PARTY IN INTEREST

The real party of interest is Trach-Mate Incorporated of 50 Sagamore Drive, Andover, Massachusetts, 01810.

II. RELATED APPEALS AND INTERFERENCES

The present application has no pending related appeals or interferences.

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III. STATUS OF CLAIMS

Claims 37, 38, 40 - 43, 46 and 50 - 53 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Knight (U.S. 1,435,311). Claims 44 and 45 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Knight (U.S. 1,435,311) in view of Conaghan et al. (U.S. 4,929,478). Claim 39 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Knight (U.S. 1,435,311) in view of DeCamp (U.S. 4,181,157). Claim 47-49 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Knight (U.S. 1,435,311) in view of Whittington (U.S. 3,762,982). Claims 1 - 36 are cancelled. Claims 37 - 53 are the subject of this appeal.

IV. STATUS OF AMENDMENTS

No amendments after the final rejection have been filed.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

As claimed in independent claim 37, the invention is directed to a protector (*Specification, page 4, line 22, page 7, lines 18 and 23, page 8, lines 1, 13 and 19, page 9, lines 3, 6 and 14, page 10, lines 9, 12, 13 and 18, Figures 1 - 13C at references 10, 20, 34, 36, 40, 56, 62, 70, 82, 90, 94, 98, and 100A - 100C*) including a protector length (*Specification, page 4, line 23, Figure 1 at reference L*) for protecting an elongated portion of a rope or webbing (*Specification, page 5, line 4, page 6, line 22, page 7, lines 18 and 22, page 8, lines 14 and 17, page 9, line 4, 6 and 16, page 10, lines 9, 12, 19 and 30, Figures 3 - 11 and 13A - 13C at references 18, 22, 30, 42, 50, 66, 72, 84, 92, 96 and 102A - 102C*). The elongated portion of the rope or webbing includes a protected length

that is substantially the same as the protector length (*Specification, page 7, line 2*). The protector includes a flexible single layer of abrasion resistant material (*Specification, page 5, line 14*) formed to have memory in a spiral shape (*Specification, page 5, line 2*). The protector memory produces a small constricting force that provides a snug fit around the rope or webbing along the full length of the protector with sufficient gripping force as to inhibit slippage along the length of the rope or webbing when no external force is applied to the protector (*Specification, page 5, lines 10 - 12 page 6, lines 12 - 15, page 7, lines 8 and 9, Figure 4 at reference C*), and to resist being unwrapped when slid sideways along a rough, hard surface in a direction transverse to the length of the spiral (*Specification, page 5, lines 12 - 14, page 6, lines 15 - 17, page 9, lines 10 - 17, Figures 5 and 9 at reference 86*). In use, the protector has a plurality of overlapping wraps around the rope or webbing (*Specification, page 5, lines 20 - 22, and Figures 2 and 4 at reference 16*) such that when expanded over the rope or webbing there will still exist sufficient overlap of the spiral to completely envelope and protect the rope or webbing from abrasion damage when a force greater than the constricting force caused by sliding actions opens an edge of an outer overlapping wrap (*Specification, page 9, lines 10 - 17, and Figure 9 at reference 80*).

As claimed in independent claim 50, the invention is directed to a protector (*Specification, page 4, line 22, page 7, lines 18 and 23, page 8, lines 1, 13 and 19, page 9, lines 3, 6 and 14, page 10, lines 9, 12, 13 and 18, Figures 1 - 13C at references 10, 20, 34, 36, 40, 56, 62, 70, 82, 90, 94, 98, and 100A - 100C*) including a protector length (*Specification, page 4, line 23, Figure 1 at reference L*) for protecting an elongated portion of a rope or webbing (*Specification, page 5, line 4, page 6, line 22, page 7, lines*

18 and 22, page 8, lines 14 and 17, page 9, line 4, 6 and 16, page 10, lines 9, 12, 19 and 30, Figures 3 - 11 and 13A - 13C at references 18, 22, 30, 42, 50, 66, 72, 84, 92, 96 and 102A - 102C). The elongated portion of the rope or webbing includes a protected length that is substantially the same as the protector length (*Specification*, page 7, line 2). The protector includes a flexible single layer of abrasion resistant material (*Specification*, page 5, line 14) formed to have memory in a spiral shape (*Specification*, page 5, line 2). The protector memory produces a small constricting force that provides a snug fit around the rope or webbing along the full length of the protector with sufficient gripping force as to inhibit slippage along the length of the rope or webbing when no external force is applied to the protector yet permit slippage along a length of the rope or webbing when a sufficient external force is applied to the protector (*Specification*, page 5, lines 10 - 12, Page 6, lines 12 - 15, page 7, lines 8 -11, Figure 4 at reference C). The protector also resists being unwrapped when slid sideways along a rough, hard surface in a direction transverse to the length of the spiral (*Specification*, page 5, lines 12 - 14, page 9, lines 10 - 17, Figures 5 and 9 at reference 86). In use, the protector has a plurality of overlapping wraps around the rope or webbing (*Specification*, page 5, lines 20 - 22, and Figures 2 and 4 at reference 16) such that when expanded over the rope or webbing there will still exist sufficient overlap of the spiral to completely envelope and protect the rope or webbing from abrasion damage when a force greater than the constricting force caused by sliding actions opens an edge of an outer overlapping wrap (*Specification*, page 9, lines 10 - 17, and Figure 9 at reference 80).

As claimed in independent method claim 52, the invention is directed to a method of protecting a protected length (*Specification*, page 4, line 23, Figure 1 at reference L)

of a rope or protector (*Specification, page 4, line 22, page 7, lines 18 and 23, page 8, lines 1, 13 and 19, page 9, lines 3, 6 and 14, page 10, lines 9, 12, 13 and 18, Figures 1 - 13C at references 10, 20, 34, 36, 40, 56, 62, 70, 82, 90, 94, 98, and 100A - 100C*). The method includes the steps of providing a flexible single layer of abrasion resistant material (*Specification, page 5, line 14*) formed to have memory in a spiral shape (*Specification, page 5, line 2*) and having a protector length (*Specification, page 4, line 23, Figure 1 at reference L*) that is substantially the same as the protected length of the rope or webbing (*Specification, page 7, lines 1 and 2*). The method also includes the step of constricting the protector around the rope or webbing with a small constricting force applied by the spiral shape to achieve a snug fit around the rope or webbing along the full length of the protector with sufficient gripping force as to inhibit slippage along the length of the rope or webbing when no external force is applied to the protector (*Specification, page 5, lines 10 - 12, page 6, lines 12 - 15, page 7, lines 8 - 11, Figure 4 at reference C*). The method also includes the step of resisting the protector from being unwrapped when slid sideways along a rough, hard surface in a direction transverse to the length of the spiral by the constricting force (*Specification, page 5, lines 12 - 14, page 6, lines 15 - 17, page 9, lines 10 - 17, Figures 5 and 9 at reference 86*). The method also includes the step of permitting an inner spiral portion of the protector to be exposed when a force greater than the constricting force is applied in the direction transverse to the length of the spiral due to the protector including a plurality of overlapping wraps around the rope or webbing (*Specification, page 5, lines 20 - 22, and Figures 2 and 4 at reference 16*) such that when expanded over the rope or webbing there will still exist sufficient overlap of the spiral to completely envelope and protect the rope or webbing

from abrasion damage when the force greater than the constricting force causes an edge of an outer overlapping wrap to be opened (*Specification, page 9, lines 10 - 17, and Figure 9 at reference 80*).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The grounds for rejection presented for review in this appeal are as follows. The examiner has rejected each of independent claims 37, 50 and 52 under 35 U.S.C. §103(a) over the Knight reference (U.S. Patent No. 1,435,311).

VII. ARGUMENT

The Knight Reference:

As demonstrated by the Declaration of Richard F. Grossman, the Knight reference fails to teach or suggest how a protector product of the invention may be made. The final office action does not rebut this demonstration of the non-enablement of the Knight reference, but rather maintains the rejection on the argument that Applicants here are not claiming a method of manufacture.

A non-enabling reference may not be used in an anticipation rejection under §102. See *In re Borst*, 345 F.2d 851, 145 U.S.P.Q. 554 (CCPA 1965). Although a non-enabling reference, however, may be used in an obviousness rejection under §103, the combined teachings of the prior art must be enabling. *Symbol Technologies, Inc. v. Opticon, Inc.*, 935 F.2d 1569, 19 U.S.P.Q.2d 1241 (Fed Cir. 1991). This is because the other references in a §103 rejection may provide the further teachings to support the §103 rejection. Where a single reference, however, is cited in a §103 rejection, applicants submit that

such a reference must be enabling because otherwise the requirement that an anticipating reference be enabling would be circumvented. In short, the combined teachings of the prior art in a §103 rejection must be enabling, and when a single reference only is cited in a §103 rejection, that reference must be enabling. Applicants submit, therefore, that the Knight reference is not enabling and that it may not be relied upon by itself to support the §103 rejection.

With regard to the Knight reference itself, if a tubular rubber or rubber compound were to be slit longitudinally as disclosed in the Knight reference, it would not provide an “inherent coiling or rolling action” as stated in the Knight reference (See the Grossman Declaration attached hereto, paragraph 4).

It is also not at all clear how one might produce a device that provides such an inherent coiling or rolling action using the teachings of the Knight reference (Grossman Declaration, paragraph 10). When a tubular rubber or rubber compound material is split as disclosed in the Knight reference, it would largely maintain its shape, even with the longitudinal slit (Grossman Declaration, paragraph 7). This is due to the fact that no forces have been introduced to the device to cause the material to coil (Grossman Declaration, paragraph 7).

A device formed in accordance with the teachings of Knight, therefore, would not have a plurality of overlapping wraps around an elongated element within the device such that there will exist sufficient overlap to completely envelope and protect the elongated element within the device from abrasion damage when a force greater than the constricting force caused by sliding actions opens an edge of an outer overlapping wrap (Grossman Declaration, paragraph 8).

A tubular rubber or rubber compound material that is split as disclosed in the Knight reference, therefore, will not have a memory that produces a small constricting force that provides a snug fit around an elongated element of any diameter along the full length of the device with sufficient gripping force as to inhibit slippage along the length of the elongated element when no external force is applied to the protector, yet resists being unwrapped when slid sideways along a rough, hard surface in a direction transverse to the length of the device (Grossman Declaration, paragraph 9).

Moreover, the Knight reference issued in 1922. Applicants further submit that the need has existed for devices of the invention for a considerable period of time. Prior to the commercial introduction of devices in accordance with embodiments of the invention, ropes were either unprotected at stress or abrasion points, or were protected by complex enclosing protectors that fastened with, for example, VELCRO or clips, or were simply protected by placing an article under the rope at the abrasion point (See the Declaration of Mark O'Donnell filed January 27, 2005, paragraphs 6 and 7). A copy of the O'Donnell Declaration filed January 27, 2005 is enclosed.

Commercial Success:

Additionally, the commercial introduction of products in accordance with embodiments of the invention has been met with substantial commercial success (See the O'Donnell Declaration attached hereto, paragraph 10), and this commercial success is due to the product being easily applied to and positioned on a rope (without requiring a fixed attachment), yet provide sufficient protection through the use of wrapping the protector around the rope with sufficient overlap to provide an underlying abrasion

resistant surface under the exposed abrasion resistant outer surface (O'Donnell Declaration, paragraph 11). Applicants further submit that applicants' SPIROLL ® product has been met with substantial commercial success in the market due to certain features of the product as claimed in at least claims 37, 50 and 52. Such commercial success must be considered and applicants' prima facie demonstration of commercial success has not been rebutted in the final office action. As such, the final rejection must be reversed. See *Demaco Corporation v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 7 U.S.P.Q.2d 1222 (Fed. Cir. 1988).

In particular, the feature of the SPIROLL® brand rope protector that it may be easily applied to and positioned on a rope (without requiring a fixed attachment), yet provide sufficient protection through the use of wrapping the protector around the rope with sufficient overlap to provide an underlying abrasion resistant surface under the exposed abrasion resistant outer surface, is believed to be a significant factor in the commercial success with which the product has been met (See the Second O'Donnell Declaration attached hereto, ¶3).

The feature of the product having a small constricting force provided by the spiral shape that provides a snug fit around the rope or webbing along the full length of the protector with sufficient gripping force as to inhibit slippage along the length of the rope or webbing when no external force is applied to the protector, is an important feature to customers is also believed to be a significant factor in the commercial success with which the product has been met (Second O'Donnell Declaration, ¶4).

The resistance provided by the product to being unwrapped when slid sideways along a rough, hard surface in a direction transverse to the length of the spiral is also

believed to be a significant factor in the commercial success with which the product has been met (Second O'Donnell Declaration, ¶4).

The feature of the product having a memory that produces a small constricting force that provides a snug fit around the rope or webbing along the full length of the protector with sufficient gripping force as to inhibit slippage along the length of the rope or webbing when no external force is applied to the protector, yet permit slippage along a length of the rope or webbing when a sufficient external force is applied to the protector is also believed to be a significant factor in the commercial success with which the product has been met (Second O'Donnell Declaration, ¶5).

Applicants submit, therefore, that commercial success with which the SPIROLL® product has been met is due to the above discussed features of at least claims 37, 50 and 52 (Second O'Donnell Declaration, ¶6).

Claim 37

Independent claim 37 requires, in part, a flexible single layer of abrasion resistant material formed to have memory in a spiral shape. The protector memory produces a small constricting force that provides a snug fit around the rope or webbing along the full length of the protector with sufficient gripping force as to inhibit slippage along the length of the rope or webbing when no external force is applied to the protector. The Knight reference does not disclose, teach or suggest this feature. Claim 37 also requires, in part, that the device resists being unwrapped when slid sideways along a rough, hard surface in a direction transverse to the length of the spiral; said protector, in use, having a plurality of overlapping wraps around said rope and webbing such that when expanded

over the rope or webbing there will still exist sufficient overlap of the spiral to completely envelope and protect the rope or webbing from abrasion damage when a force greater than the constricting force caused by sliding actions opens an edge of an outer overlapping wrap

These features of claim 37 are not disclosed, taught or suggested in the Knight reference, satisfy a long felt need, and are in large part responsible for the commercial success of products of the invention. Applicants submit, therefore, that the final rejection of claim 37 should be reversed. Each of claims 38 - 49 depends from claim 37 and further limits the subject matter of claim 37. The final rejection of each of claims 37 - 49, therefore, should also be reversed.

Claim 50

Independent claim 50 requires, in part, a flexible single layer of abrasion resistant material that is formed to have memory in a spiral shape. The protector memory produces a small constricting force that provides a snug fit around the rope or webbing along the full length of the protector with sufficient gripping force as to inhibit slippage along the length of the rope or webbing when no external force is applied to the protector yet permit slippage along a length of the rope or webbing when a sufficient external force is applied to the protector. The protector memory also resists being unwrapped when the protector is slid sideways along a rough, hard surface in a direction transverse to the length of the spiral. During use, the protector has a plurality of overlapping wraps around the rope or webbing such that when expanded over the rope or webbing there will still exist sufficient overlap of the spiral to completely envelope and protect the rope or

webbing from abrasion damage when a force greater than the constricting force caused by sliding actions opens an edge of an outer overlapping wrap.

These features of claim 50 are also not disclosed, taught or suggested in the Knight reference, satisfy a long felt need, and are in large part responsible for the commercial success of products of the invention. Applicants submit, therefore, that the final rejection of claim 50 should be reversed. Claim 51 depends from claim 50 and further limits the subject matter of claim 50. The final rejection of each of claims 50 and 51, therefore, should also be reversed.

Claim 52

Independent method claim 52 requires, in part, the step of providing a flexible single layer of abrasion resistant material formed to have memory in a spiral shape and having a protector length that is substantially the same as the protected length of the rope or webbing. Method claim 52 further requires the step of constricting the protector around the rope or webbing with a small constricting force applied by the spiral shape to achieve a snug fit around the rope or webbing along the full length of the protector with sufficient gripping force as to inhibit slippage along the length of the rope or webbing when no external force is applied to the protector. Claim 52 also requires resisting the protector from being unwrapped when slid sideways along a rough, hard surface in a direction transverse to the length of the spiral by the constricting force, and permitting an inner spiral portion of the protector to be exposed when a force greater than the constricting force is applied in the direction transverse to the length of the spiral due to the protector including a plurality of overlapping wraps around the rope or webbing such

that when expanded over the rope or webbing there will still exist sufficient overlap of the spiral to completely envelope and protect the rope or webbing from abrasion damage when the force greater than the constricting force causes an edge of an outer overlapping wrap to be opened.

These features of claim 52 are also not disclosed, taught or suggested in the Knight reference, satisfy a long felt need, and are in large part responsible for the commercial success of products of the invention. Applicants submit, therefore, that the final rejection of claim 52 should be reversed. Claim 53 depends from claim 52 and further limits the subject matter of claim 52. The final rejections of each of claims 52 and 53, therefore, should also be reversed.

Each of claims 36 - 53 is submitted to be in condition for allowance. Favorable action consistent with the above is respectfully requested.

VIII. CLAIMS APPENDIX

1. - 36. (Canceled).

37. A protector for protecting an elongated portion of a rope or webbing, said protector including a protector length and said elongated portion of the rope or webbing including a protected length that is substantially the same as the protector length, said protector comprising a flexible single layer of abrasion resistant material formed to have memory in a spiral shape, said protector memory producing a small constricting force that provides a snug fit around the rope or webbing along the full length of the protector with sufficient gripping force as to inhibit slippage along the length of the rope or webbing when no external force is applied to the protector, and to resist being unwrapped

when slid sideways along a rough, hard surface in a direction transverse to the length of the spiral; said protector, in use, having a plurality of overlapping wraps around said rope or webbing such that when expanded over the rope or webbing there will still exist sufficient overlap of the spiral to completely envelope and protect the rope or webbing from abrasion damage when a force greater than the constricting force caused by sliding actions opens an edge of an outer overlapping wrap.

38. The protector as claimed in claim 37, wherein said protector permits the rope or webbing to move relative the protector along the length of the rope or webbing when the protector is pressed against a frictional surface.

39. The protector as claimed in claim 37, wherein said protector is formed of a heat settable material.

40. The protector as claimed in claim 37, wherein said protector has an inner diameter of at least about 0.8 cm.

41. The protector as claimed in claim 37, wherein said protector has an inner diameter of no more than about 2.5 cm.

42. The protector as claimed in claim 37, wherein said protector includes a sufficient width of flexible material that it wraps around itself at least one and one half times.

43. The protector as claimed in claim 37, wherein said protector is formed into a circular spiral shape.

44. The protector as claimed in claim 37, wherein said protector is formed into a triangular spiral shape.
45. The protector as claimed in claim 37, wherein said protector is formed into a square spiral shape.
46. The protector as claimed in claim 37, wherein said protector weighs less than about 2.5 ounces.
47. The protector as claimed in claim 37, wherein said protector is formed of a urethane having a thickness of about 0.1 cm to about 0.2 cm.
48. The protector as claimed in claim 37, wherein said protector is formed of a urethane having a width of about 5 cm to about 20 cm.
49. The protector as claimed in claim 37, wherein said protector is formed of a urethane having a length of about 35 cm to about 80 cm.
50. A protector for protecting an elongated portion of a rope or webbing, said protector including a protector length and said elongated portion of the rope or webbing including a protected length that is substantially the same as the protector length, said protector comprising a flexible single layer of abrasion resistant material formed to have memory in a spiral shape, said protector memory producing a small constricting force that provides a snug fit around the rope or webbing along the full length of the protector with sufficient gripping force as to inhibit slippage along the length of the rope or webbing when no external force is applied to the protector yet permit slippage along a length of the rope or webbing when a sufficient external force is applied to the protector,

and to resist being unwrapped when slid sideways along a rough, hard surface in a direction transverse to the length of the spiral; said protector, in use, having a plurality of overlapping wraps around said rope or webbing such that when expanded over the rope or webbing there will still exist sufficient overlap of the spiral to completely envelope and protect the rope or webbing from abrasion damage when a force greater than the constricting force caused by sliding actions opens an edge of an outer overlapping wrap.

51. The protector as claimed in claim 50, wherein said protector is formed into a circular spiral shape.

52. A method of protecting a protected length of a rope or protector, said method comprising the steps of:

providing a flexible single layer of abrasion resistant material formed to have memory in a spiral shape and having a protector length that is substantially the same as the protected length of the rope or webbing;

constricting said protector around the rope or webbing with a small constricting force applied by the spiral shape to achieve a snug fit around the rope or webbing along the full length of the protector with sufficient gripping force as to inhibit slippage along the length of the rope or webbing when no external force is applied to the protector;

resisting the protector from being unwrapped when slid sideways along a rough, hard surface in a direction transverse to the length of the spiral by the constricting force; and

permitting an inner spiral portion of the protector to be exposed when a force greater than the constricting force is applied in the direction transverse to the length of the spiral due to the protector including a plurality of overlapping wraps around the rope

or webbing such that when expanded over the rope or webbing there will still exist sufficient overlap of the spiral to completely envelope and protect the rope or webbing from abrasion damage when the force greater than the constricting force causes an edge of an outer overlapping wrap to be opened.

53. The method as claimed in claim 52, wherein said method further includes the step of permitting slippage along a length of the rope or webbing when a sufficient external force is applied to the protector.

IX. Evidence Appendix

Further evidence relied on by the applicants includes the following declarations under 37 C.F.R. §132:

Declaration of Mark O'Donnell filed January 27, 2005 and entered by the examiner in the Notice of Allowance mailed on May 13, 2005.

Declaration of Richard F. Grossman filed February 10, 2006 and entered by the examiner in the Office Action mailed on April 25, 2006.

Second Declaration of Mark O'Donnell filed April 12, 2006 and entered by the examiner in the Office Action mailed on April 25, 2006.

X. Related Proceedings Appendix

Pursuant to 37 C.F.R. §41.37(c)(1)(ii), decisions rendered by a court or the Board in proceedings that applicants believe have a bearing on the Boards decision in this appeal are as follows:

In re Borst, 345 F.2d 851, 145 U.S.P.Q. 554 (CCPA 1965).

Demaco Corporation v. F. Von Langsdorff Licensing Ltd., 851 F.2d 1387, 7 U.S.P.Q.2d 1222 (Fed. Cir. 1988).

Symbol Technologies, Inc. v. Opticon, Inc., 935 F.2d 1569, 19 U.S.P.Q.2d 1241 (Fed Cir. 1991).

Copies of these decisions are attached hereto.

XI. Conclusion

For the foregoing reasons, applicants respectfully request that the Board of Patent Appeals and Interferences reverse the Examiner's final rejections of each of Claims 37-53.

Respectfully submitted,



William E. Hilton
Registration No. 35,192
Gauthier & Connors LLP
225 Franklin Street, Suite 2300
Boston, Massachusetts 02110
Telephone: (617) 426-9180
Extension: 111

ATTACHMENT 1

To Appeal Brief filed on September 20, 2006

Declaration of Mark O'Donnell filed January 27, 2005 and
entered by the examiner in the Notice of Allowance mailed
on May 13, 2005.

in

U.S. Serial No. 10/800,796

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: O'Donnell et al. **GROUP:** 3752

SERIAL NO: 10/800,796 **EXAMINER:** Patrick Brinson

FILED: March 15, 2004

FOR: ROPE AND WEBBING PROTECTOR

Mail Stop: Amendment
Commissioner of Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

DECLARATION OF MARK G. O'DONNELL

1. I, Mark G. O'Donnell, of 30 Arbor Road, S. Burlington, Vermont, hereby declare as follows:

2. I am a co-inventor of the subject matter disclosed and claimed in the present application.

3. I am the V.P., Sales & Marketing of Trach Mate, Inc., the assignee of all right, title and interest in the above referenced application, all inventions disclosed therein, and any and all patents that issue therefrom.

4. I am responsible for all marketing and sales activities of Trach Mate, Inc.

5. Trach Mate, Inc. markets and sells a product called the SPIROLL® brand rope protector, a copy of a brochure of which is attached hereto as Exhibit A.

6. The SPIROLL® brand rope protector was initially introduced to the climbing market in about the fall of 2003, and was introduced to professional safety markets in about the spring of 2004. Prior to the introduction of the SPIROLL® brand rope protector, ropes were either unprotected at stress or abrasion points, or were protected by complex enclosing protectors that fastened with, for example, velcro or clips, or were simply protected by placing a jacket or climbing pack under the rope at the abrasion point.

7. For example, one review of the SPIROLL® brand rope protector in Gear Trends Specialty News (SNEWS) in September 2003 stated "Protecting ropes from abrasion or cutting has generally been a nuisance requiring either padding the rock or attaching a sleeve to the rope". The SPIROLL® brand rope protector provides sufficient protection through the use of multiple wraps while holding itself in place without the need for clips or tie-offs.

8. The Spiroll Rope Protector does not require a fastener or clip to hold itself in place on a rope. The inside diameter of the spiroll configuration is initially smaller than the rope diameter. When wrapped around the rope, it tries to return to its original inside diameter and in the process snugs down on the rope thus holding itself in place in whatever location it is placed.

9. I have been the primary person at Trach Mate, Inc. that is responsible for sales since November 2003, and have attended three trade shows throughout the country since that time.

10. Although protectors had existed in the market prior to introduction of the SPIROLL® brand rope protector, the SPIROLL® brand rope protector, because of its unique features described above, has been met with significant and surprising commercial interest from a wide variety of groups, such as sport rock climbing and professional rescue.

11. To date, Trach Mate, Inc. has sold over 1500 SPIROLL® brand rope protectors, and it is my experience from discussions with customers that the strong commercial interest in the SPIROLL® brand rope protector is due to the product being able to be easily applied to and positioned on a rope (without requiring a fixed attachment), yet provide sufficient protection through the use of wrapping the protector around the rope with sufficient overlap to provide an underlying abrasion resistant surface under the exposed abrasion resistant outer surface.

12. I acknowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001, and that such willful false statements and the like may jeopardize the validity of the application or document or any registration resulting therefrom, and I further declare that all statements made of my knowledge are true and that all statements made on information and belief are believed to be true.

Date: January 27, 2005

A handwritten signature in cursive script, reading "Mark O'Donnell", written in black ink. The signature is positioned above a horizontal line.

Mark O'Donnell

30 Arbor Road
S. Burlington, VT 06738

ATTACHMENT 2

To Appeal Brief filed on September 20, 2006

Declaration of Richard F. Grossman filed February 10, 2006 and entered by the examiner in the Office Action mailed on April 25, 2006.

in

U.S. Serial No. 10/800,796

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: O'Donnell et al. **GROUP:** 3752
SERIAL NO: 10/800,796 **EXAMINER:** Patrick Brinson
FILED: March 15, 2004
FOR: ROPE AND WEBBING PROTECTOR

Mail Stop: Amendment
Commissioner of Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

DECLARATION OF RICHARD F. GROSSMAN

1. I, Richard F. Grossman, of 1013 Orient Ave, Wilmington, DE, hereby declare as follows:
2. I have more than 35 years of experience in developing rubber and plastics formulations for various industrial and commercial applications. I have worked as a research chemist and gained extensive experience in compounding rubber and plastic compositions, including butyl, neoprene, SBR, XLPE and PVC. I have become very familiar with molding as well as extrusion of a variety of materials, including rubber and rubber compounds. A copy of my *curriculum vitae* is attached hereto as Exhibit A.
3. I received an A.B. degree in physical chemistry from Cornell University in 1955, an A.M. degree in Chemistry from Harvard University in 1956, and a Ph.D. in physical

chemistry from Purdue University in 1962. In addition, I have authored numerous publications and have been issued more than 60 U.S. Patents. I am editor of The Mixing of Rubber, Chapman & Hall, and wrote several chapters. I was co-editor of Vol. 4, Encyclopedia of PVC. I have written chapters on antistatic agents, lubricants, stabilizers, miscellaneous additives, powder molding, factory operations, and post-finishing processes for several textbooks. In addition, I have lectured on formulating and mixing rubber and PVC. I am a Fellow of the Society of Plastics Engineers, past Chairman of the New York Rubber Group, and Chairman-Elect of the Philadelphia Rubber Group. A more complete list of my publications and patents is provided in Exhibit A.

4. I have reviewed U.S. Patent No. 1,435,311 (to Knight) The Knight reference discloses a "tubular jacket" that may be applied to a telephone cord or other electrical wiring, or to a collapsed discharge pipe of a syringe (page 1, line 105 - page 2, line 10). The Knight reference states that the device's "inherent coiling or rolling action renders it possible to apply the jacket to cores of widely different sizes" (page 2, lines 11 - 13).
5. The Knight reference, however, states (at page 1, lines 68 - 78) that the device is:

constructed of rubber or rubber-compound, or other suitable material molded or otherwise formed into substantially tubular shape and split longitudinally as at 10, its edges 11 being so constructed that they possess a strong inwardly-rolling or curling tendency, as illustrated in Figure 1, to normally reduce the size of the tubing so that the same will accommodate itself to fit and grip cores of different diameters.
6. Based on my education and experience in the field, such a material that is formed as disclosed in the Knight reference would not achieve the "inherent coiling or rolling

action" as stated in the Knight reference (page 2, lines 11 - 13). This is true of tubular rubber or rubber compound materials that exist today and those that existed in 1921.

7. When a tubular rubber or rubber compound material is split as disclosed in the Knight reference, it would largely maintain its shape, even with the longitudinal split. This is because no forces have been introduced to the device to cause the material to coil.

8. When a tubular rubber or rubber compound material is split as disclosed in the Knight reference, therefore, it would not have a plurality of overlapping wraps around an elongated element within the device such that there will exist sufficient overlap to completely envelope and protect the elongated element within the device from abrasion damage when a force greater than the constricting force caused by sliding actions opens an edge of an outer overlapping wrap.

9. As a result of this, a tubular rubber or rubber compound material that is split as disclosed in the Knight reference will not have a memory that produces a small constricting force that provides a snug fit around an elongated element of any diameter along the full length of the device with sufficient gripping force as to inhibit slippage along the length of the elongated element when no external force is applied to the protector, yet that will resist being unwrapped when slid sideways along a rough, hard surface in a direction transverse to the length of the device.

10. It is not at all clear to me how one might possibly modify the teachings of the Knight reference, which uses a molded or otherwise formed tubular rubber or rubber compound, to provide a device that has a memory to produce the constricting force discussed above in paragraph 9.

11. I acknowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001, and that such willful false statements and the like may jeopardize the validity of the application or document or any registration resulting therefrom, and I further declare that all statements made of my knowledge are true and that all statements made on information and belief are believed to be true.

Date: February 8, 2006

Richard F. Grossman

Richard F. Grossman

1013 Orient Ave
Wilmington, DE 19807

EXHIBIT A

DR RICHARD F. GROSSMAN

CURRICULUM VITEA

Education:

1955: AB with Honors in Chemistry, Cornell, Phi Beta Kappa, thesis on Cyclization Reactions of β -methylheptenone published

1956: AM in Chemistry, Harvard, Sigma Xi, thesis on infrared spectra of molecular addition compounds published.

1962: PhD Physical Chemistry, Purdue, jointly with Univ. of Chicago, thesis adviser M.J.S. Dewar, computer programs for molecular orbital calculations, spectral properties of heterocycles,

Employment:

2003 - present: Consultant for Halstab, a supplier of lubricants and stabilizers for rubber and plastics.

1995-2003: Technical Director, Halstab, a supplier of lubricants and stabilizers for rubber and plastics.

1984-1995 Technical Director, Synthetic Products Co, then VP R&D. Supplier of stearates, lubricants and stabilizers for rubber and plastics. I became Vice President of Research & Development. In 1995 Synthetic Products was dissolved, whereupon I joined Halstab, a supplier of lubricants and stabilizers, as Technical Director. After retirement in 2003, I continued at Halstab as a consultant.

1982-1984 Technical Service Manager, Montedison USA, for EPDM, peroxides, fluoroelastomers and related products. Montedison USA was a supplier of synthetic rubber, organic peroxides, and fluoroelastomers. I provided technical service on Algoflon FKM, Fomblin, and PTFE to rubber and plastics industry. I set up several injection molding machines at customer locations and trade shows and personally molded many articles and investigated mold release systems for synthetic rubber and for fluoroelastomers.

1978-1982 Polymer Services became part of Polysar, Inc. , a major supplier of synthetic elastomers. I was appointed Senior Technical Advisor for Polysar, acting as the technical liaison between Polysar's elastomer sales and custom

compounding divisions. While at Polysar, I was a member of the business team that led to the acquisition of the BF Goodrich EPDM facility, and visited customers worldwide in this capacity.

1971-1978 Technical Director, Polymer Services, compounder of rubber and plastics. As technical director of Polymer Services, I was responsible for developing a large number of recipes for compounds, including natural rubber, general and special purpose synthetic rubber. Many of these were for extrusion applications. In this capacity, I visited customers engaged in extrusion of tubing, hose and insulated wire and provided technical service.

1968-1971 Research Director, Cooke Color & Chemical Co. Responsible for testing, product development, and technical service. At the time, the largest custom mixer of rubber and plastic compositions in the US; 11 mixing lines running rubber, PE, PVC, styrenics. Developed the first commercial radiation crosslinkable wire insulation compounds.

1963-1968 Group Leader, New Products, Norton Co. Led R&D group which filed 30+ patents relating to adhesive and release coatings for pressure sensitive tapes and coated abrasives. These include US 3,508,949 on new release agents for aggressive silicone-based adhesives. Member of Norton corporate R&D board.

1962 to 1963: I was physical chemistry instructor at the University of Chicago. Next, from 1963 to 1967 I was group leader for new products at Norton Co., and was responsible for the compounding of pressure sensitive adhesives and release coatings for adhesive tapes. From 1967 to 1971 I was the research director for Cooke, Color & Chemical Co., where I supervised the compounding, mixing and testing of ten Banbury mixing lines, including EPDM, neoprene, NBR/PVC, PVC, SBR and XLPE compositions.

1957-1961: Chemist, Anaconda Wire & Cable Co. Compounded PVC, PE, Neoprene butyl and SBR. 2 patents, several publications. Familiar with mixing and testing of rubber and plastic compositions. Developed components for the Distant Early Warning Line and for missile ignition cables.

1956-1957: Technical writing and editing (US Army). Commissioned June 1955, now in Inactive Reserve.

Memberships and Contributions:

Fellow of the Society of Plastics Engineers; past chairman of the Vinyl and the Polymer Additives and Modifiers Divisions.

Author of chapters:

Use of Specialty Elastomers in Thermoset Polyester Compositions in K. Riew, Rubber-Toughened Plastics, ACS Publications.

Lubricants in J. Lutz, Thermoplastic Polymer Additives, Marcel Dekker.

Antistatic Agents, Dispersions, Reactive Monomers, Organic Peroxides, Dispersion Aids, Coupling Agents, Scavengers, and Internal Release Agents in J. Edenbaum, Polymer Modifier & Additives Handbook.

Lubricants, Antistatic Agents, Nonlead Stabilizers in E.J. Wickson, Handbook of PVC Formulating, John Wiley.

Editor:

The Mixing of Rubber, Chapman & Hall, and chapters on mixing procedures.

With J. Lutz, Polymer Modifiers and Additives, Marcel Dekker.

With L. Nass, Vol. 4, Encyclopedia of PVC, Marcel Dekker

2nd Edition, Handbook of PVC Formulating, John Wiley, now in progress.

Lectured on:

Mixing of rubber; Testing; Vulcanization; Rubber Compounding; Molding; Lubricants; Stabilizers and Antioxidants.

Recent patents:

US 6,475,522 Synthetic polymer compositions containing antibiotics as antioxidants.

US 6,376,693 + 6,215,010 Synthesis of organotin oxides

US 6,140,403 Coated acid absorber costabilizers for polymers

US 6,077,882 (Subdivision of above)

US 5,561,182 Heat Stabilization of PVC

US 5,475,045 Reduction of extractable heavy metals

US 5,439,742 Electrical insulting compositions

US 5,352,723 Compositions containing hydrotalcites

US 5,162,557 Ruthenium aromatic carboxylates

US 5,047,458 Melamine-based flame retardants

US 5,083,235 Method of making capacitors

US 4,963,127 Stannic terephthalate

Applied for – Additives to promote biodegradation of PVC

Recent publications:

Combustion Products of Lead Stabilizers, J Vinyl & Additive Tech (JVAT) 6, 138 (2000); JVAT 7, 65 (2001)
New Class of Antioxidants, JVAT 7, 24 (2001)
Service Life of Rubber Heating Hose, Rubber World, July 2000
Acid Absorbers as Costabilizers, JVAT 6, 4 (2000)
Structure of Lead Stabilizers, JVAT 3, 8 (1997); 4, 179 (1998); 4, 182 (1998)
Low Extractable Lead Stabilizers, JVAT 5, 37 (1999)
UV Light Resistance of Vinyl Miniblinds, JVAT 3, 279 (1997); 4, 214 (1998)
NMR Spectra of Lead Stabilizers, JVAT 5, 148 (1999)
Reactions of Stabilizers, JVAT 3, 5 (1997)
Lead Stabilizer Alternatives, JVAT 1, 1 (1995)
Mixed Metal Stabilizer Synergism, JVT 12, 34 (1990); 12, 142 (1990); 14, 11 (1992); 15, 22 (1993); 15, 25 (1993); JVAT 1, 227 (1995)

Expert Witness history:

1997 Rochell Ewaskin v Zellers, Inc. et al, General Division Ontario Court. Expert witness for Hudson Bay Co. (Zellers). Expert reports and deposition. Case against Hudson Bay dismissed.

1999 Goodyear Tire v Heatway. Expert witness for US District Court in Northern Ohio. Developed method for product remediation in the field; expert report.

2000 Albert V. Gore et al v George W. Bush et al, Tallahassee. Deposition and trial testimony.

2001 O'Callaghan v Baerlocher USA, Aberdeen, MS. Expert witness for Baerlocher USA. Expert report and hearing testimony. Case settled favorably to Baerlocher.

2003 Northrop Grumman v US Navy. Expert witness for Northrop Grumman. Expert reports, deposition and hearing testimony. Northrop Grumman victorious.

2004—present: Richards Mfg. v Thomas & Betts. Expert witness for Richards Mfg. Expert reports and deposition.

2004 Kracor v WEMA, Blue Ridge, Biltrite Corp. Expert witness for Biltrite Corp. Expert report. Case settled favorably to Biltrite.

2004 McGee v Kidd. Expert report and deposition, case settled favorably.

2005 Edwards v Rockwell. Expert witness for Hudson Bay Mining Co.

ATTACHMENT 3

To Appeal Brief filed on September 20, 2006

Second Declaration of Mark O'Donnell filed April 12, 2006 and entered by the examiner in the Office Action mailed on April 25, 2006.

in

U.S. Serial No. 10/800,796

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: O'Donnell et al. **GROUP:** 3752
SERIAL NO: 10/800,796 **EXAMINER:** Patrick Brinson
FILED: March 15, 2004
FOR: ROPE AND WEBBING PROTECTOR

**Mail Stop: Amendment
Commissioner of Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450**

SECOND DECLARATION OF MARK G. O'DONNELL

I, Mark G. O'Donnell, of 50 Sagamore Drive, Andover, MA 01810, hereby
declare as follows:

1. This Declaration supplements the earlier Declaration by myself that was filed on January 27, 2005. I affirm each of the statements made in the Declaration filed January 27, 2005.
2. To date, Trach Mate, Inc. as sold over 5,149 SPIROLL® rope protectors, and sales are continuing to increase as shown in the attached summary. The SPIROLL ® rope protector is shown and described in the Declaration filed January 27, 2005.

3. It remains my experience from discussions with customers that the strong commercial interest in the SPIROLL® brand rope protector is due to the product being able to be easily applied to and positioned on a rope (without requiring a fixed attachment), yet provide sufficient protection through the use of wrapping the protector around the rope with sufficient overlap to provide an underlying abrasion resistant surface under the exposed abrasion resistant outer surface.

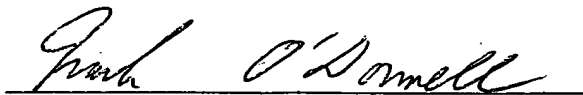
4. In particular, it is my understanding that the feature of the product having a small constricting force provided by the spiral shape that provides a snug fit around the rope or webbing along the full length of the protector with sufficient gripping force as to inhibit slippage along the length of the rope or webbing when no external force is applied to the protector is an important feature to customers. It is also my understanding that a significant feature to customers is the resistance provided by the product to being unwrapped when slid sideways along a rough, hard surface in a direction transverse to the length of the spiral.

5. It is also my understanding that the feature of the product having a memory that produces a small constricting force that provides a snug fit around the rope or webbing along the full length of the protector with sufficient gripping force as to inhibit slippage along the length of the rope or webbing when no external force is applied to the protector, yet permit slippage along a length of the rope or webbing when a sufficient external force is applied to the protector is also an important feature to customers.

6. It is my understanding and belief based on conversations with customers that the above features of the SPIROLL® product are responsible for the significant commercial success with which the SPIROLL® product has been met in the market.

7. I acknowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001, and that such willful false statements and the like may jeopardize the validity of the application or document or any registration resulting therefrom, and I further declare that all statements made of my knowledge are true and that all statements made on information and belief are believed to be true.

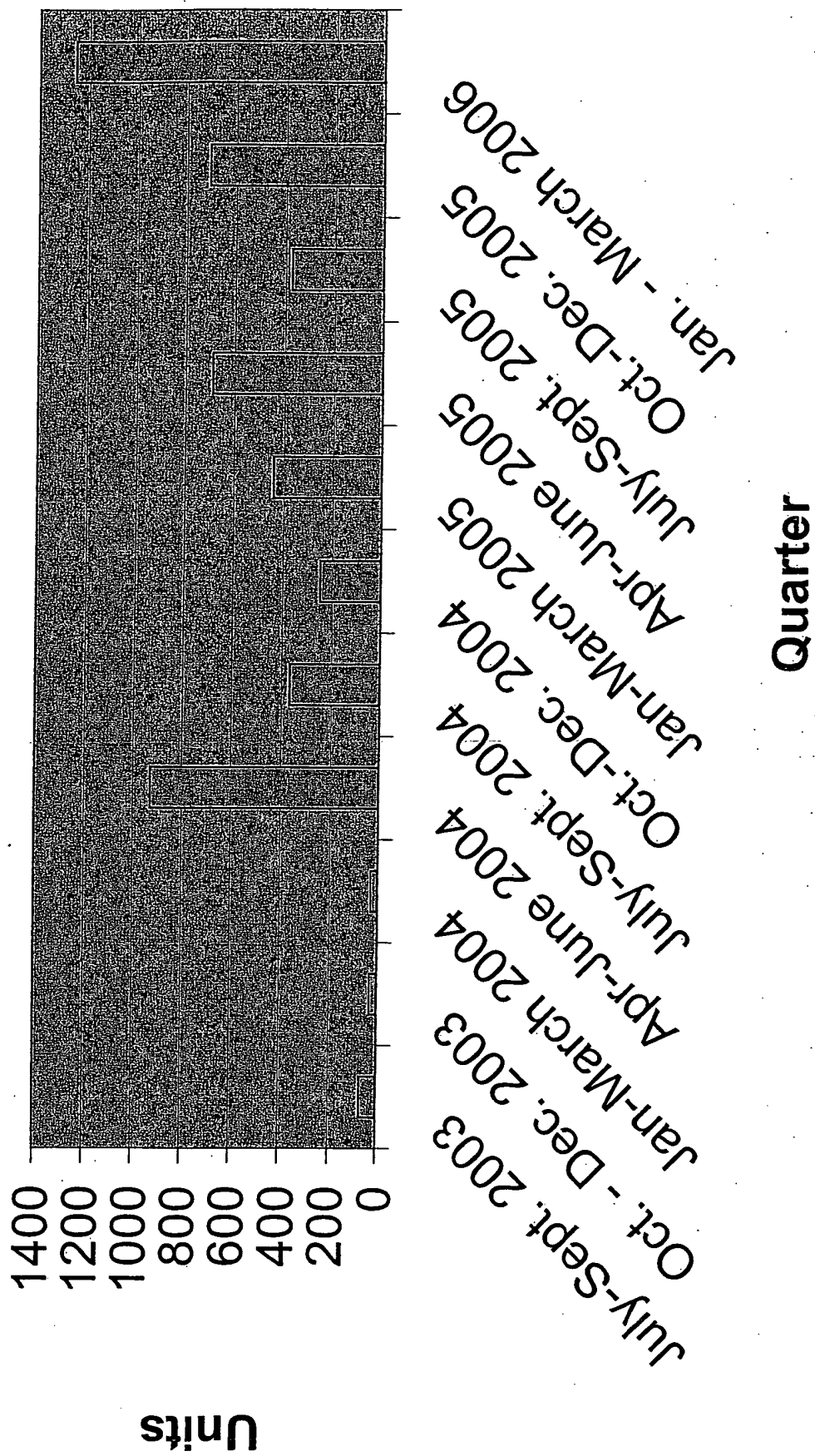
Date: April 10, 2006

A handwritten signature in cursive script, reading "Mark O'Donnell", is written over a horizontal line.

Mark O'Donnell

50 Sagamore Drive
Andover, MA 01810

Unit Sales



ATTACHMENT 4

To Appeal Brief filed on September 20, 2006

In re Borst, 345 F.2d 851, 145 U.S.P.Q. 554 (CCPA
1965).

in

U.S. Serial No. 10/800,796

LEXSEE 345 F2D 851

IN RE LYLE B. BORST

No. 7316

United States Court of Customs and Patent Appeals

52 C.C.P.A. 1398; 345 F.2d 851; 1965 CCPA LEXIS 382; 145 U.S.P.Q. (BNA) 554

Oral argument January 7, 1965

May 27, 1965

PRIOR HISTORY: [1]**

APPEAL from Patent Office, Serial No. 654,837

DISPOSITION:

Modified.

COUNSEL:*Richard Whiting (James B. VanderKelen, of counsel)* for appellant.*Clarence W. Moore (Raymond E. Martin, of counsel)* for the Commissioner.**OPINION BY:**

SMITH

OPINION:

[*1399] Before WORLEY, Chief Judge, and RICH, MARTIN, SMITH, and ALMOND, Jr., Associate Judges.

SMITH, Judge, delivered the opinion of the court:

The invention for which appellant seeks a patent comprises means for safely and effectively controlling a relatively large neutron output by varying a small and early controlled neutron input source. The application, serial No. 654,837, filed April 24, 1957, is aptly titled "Neutron Amplifier." Claim 27 is illustrative of appealed claims 27-33 and reads:

27. A subcritical neutron amplifier having a controllable neutron source and, associated with said source in cascade, an input region of neutron moderator material in which neutrons of epithermal energy from the source are moderated to thermal energy levels, a sequent fuel region

containing neutron fissionable material in mass concentration and geometric configuration adapted to augment the neutron flow by a subcritical reaction, and an output [**2] region comprising a thermal neutron barrier substantially opaque to thermal neutrons but transmissive to epithermal neutrons, whereby an amplified neutron output is subcritically produced.

Claims 30, 31 and 32 are quite similar to claim 27 and need not be separately discussed. Claim 28 is dependent upon claim 27 and calls for means to vary the transparency n1 of the neutron barrier. Claim 29 further provides that the transparency-varying means of claim 28 be such that the neutron flow may be modulated as a function of time. Claim 33 adds to claim 32 the limitation that the fuel be in an hydrogenous environment.

n1 As used in this art, the term "transparency" refers to the ease with which a neutron can pass the barrier.

In the embodiment illustrated and described in appellant's application, the amplifier employs a Van de Graff accelerator as a source supplying neutrons to an initial stage composed of three regions or zones. The first of these, the input or moderator region, retards the speed of the neutrons entering from (low-energy) neutrons are passed to (low-energy) neutrons are passed to the second region. The second, or fuel region, consists of fissionable material, [**3] such as uranium or a water solution of uranyl nitrate, which is responsive to the entering thermal neutrons to effect fission by which more epithermal (high energy) neutrons are evolved. The second region is not of critical mass and thus by design it is incapable of exploding while producing neutrons. The third region is a neutron barrier which functions to prevent transmission of thermal neutrons to the moderator region of the

next succeeding stage, and allows only epithermal neutrons to pass.

This third region may be provided with means to vary its transparency by a shutter-like array of cadmium strips adjusted to provide [*1400] feedback control. In addition, the transparency-varying means may be provided with means responsive to a time-varying function so that the feedback neutron flow may be modulated as a function of time. It is also disclosed that a number of such amplifier stages may be cascaded to any given degree of neutron flux enhancement.

Appellant asserts that the claimed invention affords a revolutionary approach to the safety problem in the nuclear reactor art. As the amplifier is said to be inherently safe from divergent nuclear chain reaction, the [**4] intricate systems needed to monitor and control the operation of conventional neutron amplifiers to prevent an explosion are unnecessary.

The single reference relied upon by the Patent Office in rejecting the appealed claims is an Atomic Energy Commission document entitled "KAPL-M-RWS-1, A Stable Fission Pile with High Speed Control." The document is in the form of an unpublished memorandum authored by one Samsel, and will hereinafter be referred to as "Samsel." Samsel is dated February 14, 1947, and was classified as a secret document by the Commission until March 9, 1957, when it was declassified. In essence, Samsel sets forth and discusses the problems present in the control of a nuclear reactor, the concept of use of successive fuel stages to effect such control, and a description of the arrangement, composition and relative proportions of materials required to obtain the sought-for results. Samsel is prefaced by a statement that it was made to record an idea, and it nowhere indicates that the idea had been tested in an operating reactor.

The Patent Office does not invoke Samsel as a publication (which it apparently was not, at any pertinent date). Rather, the contention [**5] is that Samsel constitutes evidence of prior knowledge within the meaning of 35 USC 102(a).

While there seems to be some disagreement on the part of the solicitor, we think the most reasonable interpretation of the examiner's rejection, and one which is concurred in by the board and by appellant, is that claims 27, 30, 31, and 32 are fully met by Samsel and thus the subject matter defined therein is unpatentable because it was known by another in this country prior to appellant's invention thereof. As to claims 28, 29, and 33, even though not fully met by Samsel, they are said to be obvious within the meaning of 35 USC 103 in view of the prior knowledge evidenced by Samsel.

Our own independent consideration of Samsel has convinced us that it contains adequate enabling disclosure of the invention of claims 27 and 30-32, see *In re Sheppard*, 52 CCPA 859, 339 F.2d 238, 144 USPQ 42 and *In re LeGrice*, 49 CCPA 1124, 301 F.2d 929, 133 USPQ [*1401] 365, and appellant does not appear to content otherwise. n2 Rather, appellant contends that Samsel is not available as evidence of prior knowledge under sections 102(a) and 103. Appellant also argues that, even if Samsel is available, [**6] the subject matter of claims 28, 29, and 33 is not obvious in view thereof. We agree with this characterization of the essential issues presented on this appeal, and will treat them in the order stated above.

n2 Appellant does argue that there is a mathematical defect in the Samsel disclosure. While such may or may not be the case, appellant has failed to show that a person of ordinary skill in the art would not have been able to reduce the Samsel conception to practice based on the information disclosed therein.

In the case of *In re Schlittler*, 43 CCPA 986, 234 F.2d 882, 110 USPQ 304, this court was presented with the following situation: A manuscript containing an anticipatory disclosure of the appellants' claimed invention had been submitted to The Journal of the American Chemical Society and was later published. The date to which the appellants' application was entitled for purposes of constructive reduction to practice was earlier than the publication date of the Journal article, and therefore the Patent Office did not contend that the "printed publication" portion of section 102(a) was applicable. However, the manuscript bore a notation that it had been received [**7] by the publisher on a date prior to the effective filing date of the appellants' application. On the basis of this notation the Patent Office argued that the article constituted sufficient evidence of prior knowledge under section 102(a).

After an exhaustive review of the authorities, and of the legislative history of the Patent Act of 1952, this court rejected the contention of the Patent Office, and concluded that such a document was not proper evidence of prior knowledge. In reversing, the court stated (43 CCPA at 992):

In our opinion, one of the essential elements of the word "known" as used in 35 U.S.C. 102(a) is knowledge of an invention which has been completed by reduction to practice, actual or constructive, and is not satisfied by disclosure of a conception only.

And therefore, since the Journal article, "at best, could be evidence of nothing more than conception and disclosure of the invention," the

* * * placing of the Nystrom article in the hands of the publishers did not constitute either prima facie or conclusive evidence of knowledge or use by others in this country of the invention disclosed by the article, within the meaning of Title 35, Section 102(a) [**8] of the United States Code, since the knowledge was of a conception only and not of a reduction to practice.

Another aspect of the court's discussion in Schlittler involved the well-established principle that "prior knowledge of a patented invention would not invalidate a claim of the patent unless such knowledge [*1402] was available to the public." After reaffirming that principle, the court went on to state:

Obviously, in view of the above authorities, the mere placing of a manuscript in the hands of a publisher does not necessarily make it available to the public within the meaning of said authorities.

However, the court did not go on to determine whether the Journal article was in fact available to the public, since such determination was deemed unnecessary for disposition of the case, under the court's theory.

[1] We shall consider first the public availability aspect of the Schlittler case. Although that portion of the Schlittler opinion is clearly dictum, we think it just as clearly represents the settled law. The knowledge contemplated by section 102(a) must be accessible to the public. In addition to Schlittler and cases cited therein, see, e.g., *Minneapolis-Honeywell [**9] Regulator Co. v. Midwestern Instruments, Inc.*, 298 F.2d 36, 131 USPQ 402 (7th Cir. 1961); *Rem-Cru Titanium, Inc. v. Watson*, 152 F.Supp. 282, 114 USPQ 529 (D.D.C. 1957).

In the instant case, Samsel was clearly not publicly available during the period it was under secrecy classification by the Atomic Energy Commission. We note that the date of the declassification, however, was prior to appellant's filing date, and it is perhaps arguable that Samsel became accessible to the public upon declassification. But we do not find it necessary to decide that difficult question, for there is a statutory provision which is, we think dispositive of the question of publicity. Section 155 of the Atomic Energy Act of 1954 (42 USC 2185) provides:

In connection with applications for patents covered by this subchapter, the fact that the invention or discovery was known or used before shall be a bar to the patenting of such invention or discovery even though such prior knowledge or use was under secrecy within the atomic energy program of the United States.

We think the meaning and intent of this provision is so clear as to admit of no dispute: With respect to subject matter covered by the patent [**10] provisions of the Atomic Energy Act, prior knowledge or use under section 102(a) need not be accessible to the public. Therefore, Samsel is available as evidence of prior knowledge insofar as the requirement for publicity is concerned.

[2] The remaining consideration regarding the status of Samsel as evidence of prior knowledge directly calls into question the correctness of the unequivocal holding in Schlittler that the knowledge must be of a reduction to practice, either actual or constructive. After much deliberation, we have concluded that such a requirement is illogical and anomalous, and to the extent Schlittler is inconsistent with the decision in this case, it is hereby expressly overruled.

[*1403] [3] The mere fact that a disclosure is contained in a patent or application and thus "constructively" reduced to practice, or that it is found in a printed publication, does not make the disclosure itself any more meaningful to those skilled in the art (and thus, ultimately, to the public). Rather, the criterion should be whether the disclosure is sufficient to enable one skilled in the art to reduce the disclosed invention to practice. In other words, the disclosure [**11] must be such as will give possession of the invention to the person of ordinary skill. Even the act of publication or the fiction of constructive reduction to practice will not suffice if the disclosure does not meet this standard. See *In re Sheppard* and *In re LeGrice*, supra.

[4] Where, as is true of Samsel, the disclosure constituting evidence of prior knowledge contains, in the words of the Board of Appeals, "a description of the invention fully commensurate with the present patent application," we hold that the disclosure need not be of an invention reduced to practice, either actually or constructively. We therefore affirm the rejection of claims 27, 30, 31, and 32.

It remains for us to consider the correctness of the rejection of claims 28, 29, and 33 as obvious in view of the prior knowledge evidenced by Samsel. As previously indicated, claim 28 adds to basic claim 27 the limitation that means be provided to vary the transparency of the neutron barrier. Appellant's specification discusses several such means, including the shutterlike array of cadmium strips referred to earlier. Such a transparency-varying arrangement permits controlled feedback so that once the system [**12] has reached a desired neutron generation level, the neutron source may be removed and the system will be maintained in self-sustaining but convergent operation.

The examiner's position, affirmed by the board, was that the provision of such means would be obvious to

one of ordinary skill in the art. The argument seems to be that since Samsel discloses a neutron barrier, it can be reasoned therefrom that the thicker the barrier the greater the obstruction to the passage of neutrons, and therefore it would be obvious to vary the thickness of the barrier if it were desired to vary the neutron transparency of the barrier. We note, however, that there is absolutely no hint in Samsel that a variable barrier would even be desirable, much less possible to construct. From the evidence of record, it appears that the concepts of a variable barrier and means for accomplishing it are wholly appellant's, and were manifestly unobvious at the time appellant made his invention.

Claim 29, as previously pointed out, simply adds a further limitation to claim 28. We think the rejection of claim 29 was erroneous for the same reasons as the rejection of claim 28.

[*1404] Claim 33 specifies [**13] that the fissionable fuel be in an "hydrogenous environment." The examiner felt that it would be obvious to "substitute the equivalent water moderator for the carbon moderator disclosed by Samsel because to do so would involve mere skill in the art." We think this reasoning is erroneous on two grounds. First, there is nothing in the record which shows the equivalency of water to carbon as a

moderator. Second, and much more importantly, appellant's "hydrogenous environment" limitation is directed to the fuel zone rather than the moderator zone.

[5] The solicitor, apparently recognizing the inadequacy of the examiner's treatment of claim 33, asks us to take judicial notice of a textbook which allegedly discloses the use of an aqueous solution of uranyl sulfate in the core of a homogeneous reactor. We decline to take notice of this reference, for it is in a highly technical area of subject matter and we have no way of evaluating its accuracy or repute in the art. As we said when confronted with a similar request in *In re Petering*, 49 CCPA 993, 999, 301 F.2d 676, 133 USPQ 275, "Such a reference should have been the subject of a discussion between appellants and the experts in [**14] the Patent Office and we do not consider it appropriate for us to attempt to evaluate this reference without the benefit of such discussion."

For the foregoing reasons, the rejection of claims 27, 30, 31 and 32 is affirmed, and the rejection of claims 28, 29 and 33 is reversed.

WORLEY, C.J., took no part in the consideration or decision of this case.

ATTACHMENT 5

To Appeal Brief filed on September 20, 2006

*Demaco Corporation v. F. Von Langsdorff Licensing
Ltd.*, 851 F.2d 1387, 7 U.S.P.Q.2d 1222 (Fed. Cir. 1988).

in

U.S. Serial No. 10/800,796

LEXSEE 851 F2D 1387

**Demaco Corporation, Plaintiff-Appellee, v. F. Von Langsdorff Licensing Limited
and F. Von Langsdorff Bauverfahren GmbH, Defendants-Appellants**

No. 86-1439

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

851 F.2d 1387; 1988 U.S. App. LEXIS 8595; 7 U.S.P.Q.2D (BNA) 1222

June 21, 1988, Decided

PRIOR HISTORY: [1]**

Appealed from U.S. District Court for the Middle District of Florida, Judge Castagna.

DISPOSITION:

Reversed and Remanded.

COUNSEL:

Russell D. Orkin, Webb, Burden, Robinson & Webb, P.A., of Pittsburgh, Pennsylvania, argued for Plaintiff-Appellee. With him on the brief was Richard L. Byrne.

Albert C. Johnston, St. Onge Steward Johnson & Reens, of Stamford, Connecticut, argued for Defendants-Appellants. With him on the brief were William J. Speranza and Michael L. Goldman.

JUDGES:

Friedman, Newman, and Archer, Circuit Judges. Archer, Circuit Judge, concurring.

OPINION BY:

NEWMAN

OPINION:

[*1388] NEWMAN, Circuit Judge.

F. Von Langsdorff Bauverfahren GmbH and F. Von Langsdorff Licensing Ltd. (together "Langsdorff") appeal the judgment n1 in favor of declaratory judgment plaintiff Demaco Corporation and counterclaim defendants Coastal Contracting Corporation, Paver Systems, Inc., and R. I. Lampus Company (together "Demaco"). The United States District Court for the Middle District of Florida, Tampa Division, held that claims 9, 13, and

29-33 of United States Patent No. 4,128,357 ("the Barth patent") are invalid for obviousness under 35 U.S.C. § 103, that all [**2] of the claims are unenforceable for inequitable conduct, and [*1389] thus that the patent is not infringed. We reverse.

n1 *Demaco Corporation v. F. Von Langsdorff Licensing Ltd.*, No. 84-1051-CIV-T-15 (M.D. Fla. May 22, 1986) (amended April 1, 1987).

The Patented Invention

The patent claims here at issue are for a paving stone of specific shape and proportion, as illustrated in claim 9, an agreed "typical" claim (as rewritten in independent form):

9. Ground covering slab elements for paving ground areas, each of said elements being a single piece of concrete consisting of a head portion and a stem portion meeting at a dummy groove allowing, but not necessitating, breakage of said slab elements into heads and stems along said dummy grooves and being delimited by two opposite sides that form angled traces about a longitudinal axis common to said head and said stem, each said angled trace being formed by a succession of sides comprising at said head an inclined side face inclined at [**3] 45 degrees in one direction relatively to said axis, a lateral side face extending lengthwise with respect to said axis, and another inclined side face inclined at 45 degrees in the opposite direction with respect to the said axis, and comprising at said stem a

lateral side face extending lengthwise with respect to said axis, each said lateral face of said stem being complementary to a lateral face of said head, said end face of said head together with said inclined sides of said head and said lateral faces of said head and said dummy groove describing a centrally symmetrically [sic] octagon, said dummy groove together with said end face of said stem and said lateral faces of said stem being symmetrical about the center of said stem, and said head and said stem being mirror symmetrical about said longitudinal axis, wherein said end face of said head, said lateral faces of said head, said inclined sides of said head and said dummy groove together describe an octagon, with equal lengths of said end face, said lateral faces and said dummy groove, and with equal lengths of said inclined sides of said head, wherein said inclined sides of said head are each shorter than said end face of [**4] said head.

Appellant Langsdorff describes the advantages of the Barth paving stone as combining the feature of structural strength obtained from an elongated, interlocking paver, with the feature whereby, however the asymmetric stone is laid, the effect is the same symmetrical pattern. These characteristics are illustrated in the brochure of one of the accused infringers, wherein the Barth stone is shown along with another commercial paving stone laid in the same patterns:

[SEE ILLUSTRATION IN ORIGINAL]

[*1390] The Barth result is achieved by using the claimed paving stone.

Validity -- 35 U.S.C. § 103

A

Reexamination was requested on behalf of Langsdorff on December 2, 1982, and on behalf of Demaco on January 12, 1983. Both requesters brought new references before the United States Patent and Trademark Office ("PTO"). During reexamination the examiner confirmed some of the claims without change, Barth dropped some claims, and some new claims were added. The examiner gave the following reasons for allowing the claims:

Claims 9 and 29-33 are considered to be allowable because the prior art does not

suggest a paving [**5] stone having a head shaped as an octagon with a square stem separated by a dummy groove in which inclined sides of the head are each shorter than the end face of the head. Claim 13 is considered patentable because the prior art does not suggest a composite pavement formed by laying plural elements having an octagon head with a square stem separated by a dummy joint [laid] in a herringbone pattern as specified. Claims 20-28 are considered allowable because the prior art does not suggest a paving stone having the specific corner angles and indentations as specified.

After the PTO issued the reexamination certificate Demaco filed this declaratory judgment action. Following a trial to the bench, the district court held asserted claims 9, 13 and 29-33 invalid for obviousness. Langsdorff argues that the district court erred in its factual findings and in its application of the law.

Langsdorff asserts that a paving stone having the structure of the Barth paver, combining its ten-sided elongated shape with its appearance of an octagon joined to a square, and accompanying structural and visual advantages, is not shown or suggested in the prior art. Langsdorff argues that even [**6] if retrospectively simple in concept, the Barth paving stone was "a new product in a millennia old art". Langsdorff thus argues that the district court did not understand the invention, pointing to the court's statement that

the essence of the advance made by the Barth paver is to accomplish with one piece of concrete that which could be accomplished with one square piece and one octagonal piece by joining the square to the octagon.

as demonstrating that the court believed that Barth had simply joined two paving blocks into one.

The prior art showed paving stones having the general elongated shape of the Barth stone but without the dummy groove; and the geometrical figure of an octagon joined to a square was shown in mathematics texts. The prior art also showed other paving shapes having dummy grooves. The claimed relative dimensions are not shown in the prior art. Langsdorff further states, without appar-

ent contradiction, that this symmetrical paving stone pattern giving the appearance of two different stones is not shown or suggested in the art. Nor does the prior art describe or suggest a stone that gives to paving the structural strength obtained here while [**7] achieving a harmonious appearance whatever the pattern in which the stones are laid. Langsdorff presented evidence that it is the overall shape that provides the traffic load strength, by enabling an interlocking pavement.

The district court held that the Barth stone gave "no significant structural advantage . . . over other pavers", and that "there is no evidence that the Barth paver makes a stronger or more durable pavement". The patent statute does not require that a patentable invention be superior to all prior devices. *Custom Accessories, Inc. v. Jeffrey-Allan Industries, Inc.*, 807 F.2d 955, 960 n.12, 1 USPQ2d 1196, 1199 n.12 (Fed. Cir. 1986) ("Finding that an invention is an 'improvement' is not a prerequisite to patentability"); G. Rich, *Principles of Patentability*, 28 Geo. Wash. L. Rev. 393, reprinted in 42 J. Pat. Off. Soc'y 75 (1960) (discussing "the unsound notion that to be patentable an invention must be better than the prior art"). [**8] Nor does the [*1391] patent statute require that an invention be complex in order to be nonobvious. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1572, 1 USPQ2d 1593, 1600 (Fed. Cir.), cert. denied, 481 U.S. 1052, 107 S. Ct. 2187, 95 L. Ed. 2d 843 (1987):

Though technology has burgeoned, the patent system is not limited to sophisticated technologies. . . . Nowhere in the statute or the Constitution is the patent system opened only to those who make complex inventions difficult for judges to understand and foreclosed to those who make less mysterious inventions a judge can understand. . . .

See also *van Veen v. United States*, 181 Ct. Cl. 884, 386 F.2d 462, 465, 156 USPQ 403, 405 (1967) ("Experience has shown that some of the simplest advances have been the most nonobvious").

It was not disputed that the Barth stone possessed a combination of advantages not obtained with prior pavers. Indeed, the chairman of accused infringer Paver Systems testified to that effect:

Q: It's true, is it not, that the herringbone bond lay of paving stones is quite important to the strength of the pavement under traffic [**9] load?

A: Yes.

Q: In fact, your company has stressed that in its brochures, has it not?

A: Yes.

Q: Isn't there an advantage in having a stone suitable of a variety of bonds including herringbone rather than herringbone bond only?

A: Yes.

Q: Is it true from your experience that when one lays multiple pavers of the [Langsdorff] shape, no matter in which orientation they are laid the resultant pavement will have the same surface appearance pattern?

A: Yes.

Q: Now, do you know of any [interlocking] paving stone that was ever produced and sold in the United States or Canada that has the two characteristics of being suitable for a variety of bonds, including herringbone, and when laid in a variety of bonds in a pavement shows the same surface appearance in the pavement?

....

A: No.

We conclude that the district court clearly erred in its analysis of the differences between the Barth paver and the prior art.

B

The district court held that "secondary considerations are not significant in this case because first, the prior art so clearly indicates obviousness. . . ." This misstates the law. See *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 306, 227 USPQ 657, 674 (Fed. Cir. 1985), [**10] cert. denied, 475 U.S. 1017, 89 L. Ed. 2d 315, 106 S. Ct. 1201 (1986) ("evidence on secondary considerations must have been considered prior to reaching a conclusion on obviousness/nonobviousness"). This court wrote in *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538-39, 218 USPQ 871, 879 (Fed. Cir. 1983):

Indeed, evidence of secondary considerations may often be the most probative and cogent evidence in the record. It may often establish that an invention appearing

to have been obvious in light of the prior art was not. It is to be considered as part of all the evidence, not just when the decisionmaker remains in doubt after reviewing the art.

The patent has been copied. . . . Half of the industry are [licensees] . . . the other half are fighting this particular patent. . . .

The commercial response to an invention is significant to determinations of obviousness, and is entitled to fair weight. *Graham v. John Deere Co.*, 383 U.S. 1, 35-36, 148 USPQ 459, 474, 15 L. Ed. 2d 545, 86 S. Ct. 684 (1966); *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1461, 221 USPQ 481, 487 (Fed. Cir. 1984). The rationale [**11] for giving weight to the so-called "secondary considerations" is that they provide objective evidence of how the patented device is viewed in the marketplace, by those directly interested in the product. See *Graham*, 383 U.S. at 35-36, 148 USPQ at 474:

These legal inferences or subtests do focus attention on economic and motivational [*1392] rather than technical issues and are, therefore, more susceptible of judicial treatment than are the highly technical facts often present in patent litigation.

and *Safety Car Heating & Lighting Co. v. General Electric Co.*, 155 F.2d 937, 939, 69 USPQ 401, 403 (2d Cir. 1946) (L. Hand, J.):

Courts, made up of laymen as they must be, are likely either to underrate, or to overrate, the difficulties in making new and profitable discoveries in fields with which they cannot be familiar; and, so far as it is available, they had best appraise the originality involved by the circumstances which preceded, attended and succeeded the appearance of the invention.

Although the district court concluded that commercial success "is an insignificant factor in this case", the record is [**12] to the contrary. At trial Demaco's counsel stated that:

The court held that Langsdorff's licensing success was "attributable to marketing efforts seeking broad relationships with licensees including several products, advertising, and technical assistance going beyond the monopoly on the Barth paver", and concluded that it had not been proved "that purchasers seek the product due to its inherent qualities as opposed to other paving stone or nonpaving stone ground covering products." Langsdorff argues that the issue is not whether Langsdorff had a successful licensing program, but whether the patented invention was successful in the marketplace. That success was admitted by Demaco.

When a patentee asserts that commercial success supports its contention of nonobviousness, there must of course be a sufficient relationship between the commercial success and the patented invention. The term "nexus" is often used, in this context, to designate [**13] a legally and factually sufficient connection between the proven success and the patented invention, such that the objective evidence should be considered in the determination of nonobviousness. The burden of proof as to this connection or nexus resides with the patentee. See, e.g., *Cable Electric Products, Inc. v. Genmark, Inc.*, 770 F.2d 1015, 1027, 226 USPQ 881, 888 (Fed. Cir. 1985).

In meeting its burden of proof, the patentee in the first instance bears the burden of coming forward with evidence sufficient to constitute a prima facie case of the requisite nexus. See *Texas Dept. of Community Affairs v. Burdine*, 450 U.S. 248, 254 n. 7, 67 L. Ed. 2d 207, 101 S. Ct. 1089 (1981):

The phrase "prima facie case" . . . may be used by courts to describe the plaintiff's burden of producing enough evidence to permit the trier of fact to infer the fact at issue.

(citing 9 J. Wigmore, *Evidence* § 2494 (3d ed. 1940) (hereinafter *Wigmore*)); E. W. [**14] Cleary, *McCormick on Evidence* § 342 (3rd ed. 1984) (hereinafter *McCormick*):

The judge, using ordinary reasoning, may determine that fact A might reasonably be inferred from fact B, and therefore that the party has satisfied his burden [of producing evidence], or as sometimes put by the courts, has made out a "prima facie" case. [footnotes omitted]

A prima facie case of nexus is generally made out when the patentee shows both that there is commercial success, and that the thing (product or method) that is commercially successful is the invention disclosed and claimed in the patent. When the thing that is commercially successful is not coextensive with the patented invention -- for example, if the patented invention is only a component of a commercially successful machine or process -- the patentee must show prima facie a legally sufficient relationship between that which is patented and that which is sold. For example, in *Hughes Tool Co. v. Dresser Industries, Inc.*, 816 F.2d 1549, 1556, 2 USPQ2d 1396, 1402 [**15] (Fed. Cir.), cert. denied, 484 U.S. 914, 108 S. Ct. 261, 98 L. Ed. 2d 219 (1987), this court reviewed the relation between the patented feature and the thing sold and held that:

[*1393] Such continuous use of the patented feature while other features were not copied gives rise to an inference that there is a nexus between the patented feature and the commercial success.

See also *Railroad Dynamics, Inc. v. A. Stucki Co.*, 579 F. Supp. 353, 366-67, 218 USPQ 618, 628 (E.D. Pa. 1983):

The testimony as to the advantage of the spaced structure with the biasing spring easily supports the inference that the claimed invention itself was responsible for this [commercial] success.

aff'd, 727 F.2d 1506, 220 USPQ 929 (Fed. Cir.), cert. denied, 469 U.S. 871, 83 L. Ed. 2d 150, 105 S. Ct. 220 (1984).

When the patentee has presented a prima facie case of nexus, the burden of coming forward with evidence in rebuttal shifts to the challenger, as in any civil litigation.

See *Hazelwood School District v. United States*, 433 U.S. 299, 314, 53 L. Ed. 2d 768, 97 S. Ct. 2736 (1977) [**16] (Stevens, J., dissenting) ("The basic framework [in a title VII action] is the same as that in any other lawsuit. The plaintiff has the burden of proving a prima facie case; if he does so, the burden of rebutting that case shifts to the defendant"); see also *McCormick* § 336:

The burden of producing evidence on an issue . . . is usually cast first upon the party who has pleaded the existence of the fact, but as we shall see, the burden may shift to the adversary when the pleader has discharged his initial duty. [footnote omitted]

It is thus the task of the challenger to adduce evidence to show that the commercial success was due to extraneous factors other than the patented invention, such as advertising, superior workmanship, etc. As discussed in *Rosemount, Inc. v. Beckman Instruments, Inc.*, 727 F.2d 1540, 1546, 221 USPQ 1, 7 (Fed. Cir. 1984), "argument" and "conjecture" are insufficient:

Beckman's argument that a nexus between commercial success and Cardeiro's invention is lacking and its conjecture that some of the commercial success [**17] here proven may have been due to elements in nonasserted claims are inadequate to overcome the objective evidence of record.

Id. Once a prima facie case of nexus is made the court must consider the evidence adduced on both sides of the question, with such weight as is warranted. See *Ashland Oil, Inc. v. Delta Resins & Refractories*, 776 F.2d 281, 306, 227 USPQ 657, 674 (Fed. Cir. 1985) ("The objective evidence of secondary considerations may in any given case be entitled to more or less weight, depending upon its nature and its relationship to the merits of the invention"), cert. denied, 475 U.S. 1017, 89 L. Ed. 2d 315, 106 S. Ct. 1201 (1986). When a prima facie case is made and not fully rebutted, the district court may not totally ignore the objective evidence. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1555, 220 USPQ 303, 314 (Fed. Cir. 1983) ("The objective evidence of nonobviousness . . . should when present [**18] always be considered as an integral part of the analysis"),

cert. denied, 469 U.S. 851, 83 L. Ed. 2d 107, 105 S. Ct. 172 (1984).

This evidentiary routine is reflected in the decisions of this and our predecessor courts, and appears to have been followed in most trial courts. For example, in *Stevenson v. Int'l Trade Comm'n*, 67 C.C.P.A. 109, 612 F.2d 546, 204 USPQ 276 (1979) the patentee had in the first instance provided affidavit and survey evidence of public preference for the patented skateboard; the patentee was held to have

establish[ed] prima facie a nexus between commercial success and the merit of appellant's invention, the provision of an inclined foot-depressible lever.

Id. at 553, 504 USPQ at 282-83. The burden of coming forward shifted to the challenger, who presented evidence of alternative reasons for the commercial success:

In rebuttal, to show that the commercial success is unrelated to the merits of the invention, appellees presented [a witness] who gave his opinion that the commercial success was due to cosmetic reasons.

Id. The court determined that the appellee had not overcome [**19] the prima facie case of nexus, and took the objective evidence into [*1394] account in its determination of nonobviousness:

We consider the testimony proffered by appellee to be insufficient to overcome the evidentiary value of that of appellants. The net result is a positive inference that the claimed skateboard would have been unobvious at the time the invention was made to one of ordinary skill in the art.

Id. at 554, 204 USPQ at 283.

A patentee is not required to prove as part of its prima facie case that the commercial success of the patented invention is *not* due to factors other than the patented invention. It is sufficient to show that the commercial success was of the patented invention itself. A requirement for proof of the negative of all imaginable contributing factors would be unfairly burdensome, and

contrary to the ordinary rules of evidence. See 9 *Wigmore* § 2486 at 291 ("Thus, in most actions of *tort* there are many possible justifying circumstances . . .; but it would be both unfair and contrary to experience to assume that one of [**20] them was probably present and to require the plaintiff to disprove the existence of each one of them") (emphasis in original). See also *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1382, 231 USPQ 81, 92 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947, 107 S. Ct. 1606, 94 L. Ed. 2d 792 (1987), where the court stated that "the record shows that advertising makes those in the industry -- hospitals, doctors, and clinical laboratories -- aware of the diagnostic kits but does *not* make these potential users buy them; the products have to work, and there is no evidence that that is *not* the case here or that the success was *not* due to the merits of the claimed sandwich assays -- clearly contrary to the district court's finding." (Emphases added.)

In the present case, Demaco admitted that the paving stone was commercially successful. In a letter written before filing suit, Demaco described this stone as "a most important segment of the paver market", and in another letter Demaco stated that "this paver shape is in demand in both Georgia and Florida." It was further undisputed that it was the patented paving stone that was the thing [**21] sold in commerce. Demaco adduced no evidence to show that the paving stone's commercial success was due to any factor other than its patented structure. There was no evidence that its success was due, for example, to advertising or other factors unrelated to its technological advantages. By placing the burden on Langsdorff to prove that commercial success was *not* due primarily to advertising or other factors such as technical service to licensees and the licensing of other products, the district court put the shoe on the wrong foot. n2 Demaco did not meet its burden of rebutting the prima facie case of nexus between the Langsdorff patented invention and its commercial success, and the district court clearly erred in its contrary finding.

n2 The court called the Barth paver "only a pedestrian advance".

Viewing all the factors pertinent to determination of obviousness, applying the guidelines of *Graham v. Deere*, leads us to conclude that the presumption of validity had not been overcome by clear and [**22] convincing evidence. The holding of invalidity of claims 9, 13 and 29 through 33 for obviousness is reversed.

Inequitable Conduct

The district court held that the Barth patent was unenforceable for inequitable conduct, finding that German

patent (Gebrauchsmuster) No. 1,998,249 ("Geb. '249") had been intentionally withheld from the PTO, and that the threshold of materiality had been met.

The concept of inequitable conduct in patent procurement derives from the equitable doctrine of unclean hands: that a person who obtains a patent by intentionally misleading the PTO can not enforce the patent. Inequitable conduct may be held although the common law elements of fraud are absent. To achieve a just application of this penalty in the variety of situations that may arise, this court established a balancing test in *American Hoist & Derrick Co. v. Sowa & Sons, Inc.*, 725 F.2d 1350, 1364, 220 USPQ 763, 774 [*1395] (Fed. Cir.), cert. denied, 469 U.S. 821, 83 L. Ed. 2d 41, 105 S. Ct. 95 (1984), [**23] whereby the materiality of the information that was not provided to the PTO is weighed against the intent of the actor. The court is charged with reaching an equitable result in view of the particular circumstances of the case.

Geb. '249 was disclosed to the German patent office and cited by the German examiner in connection with the German counterpart of the Barth patent. It shows a nine-sided paving stone having the laying pattern shown:

[SEE ILLUSTRATION IN ORIGINAL]

The shape of Geb. '249 was described by the district court as "interesting in the sense that abnormal geometric forms are interesting." The court held that Geb. '249 satisfied the "but it may have been" test for materiality and should have been disclosed, although the court stated "the Court does not feel Geb. '249 is material when measured against the objective 'but for' test."

On the question of intent, the district court observed that Geb. '249 was a basis for rejection by the German examiner, and concluded that Geb. '249 had intentionally been withheld from the United States PTO. The court found:

The evidence shows that the applicants' German patent counsel intentionally did not provide his [**24] American counterpart with Geb. '249 despite the American attorney's inquiry specifically directed to that issue.

The "evidence" appears to consist solely of correspondence between the German attorney and the U.S. attorney, as follows:

On December 3, 1976 the German attorney wrote to the U.S. attorney stating:

At first we would ask you to file the list of all prior art meanwhile become known to the Applicants beyond the citations made by the Examiner in the U.S. procedure.

The prior art listed by the German attorney included nine German references and one Austrian reference, including Geb. '249. Of these ten references, copies of the drawings of seven were enclosed with the letter, including the full text of two references. No copies of the remaining three (including Geb. '249) were sent.

A second letter from the German attorney dated December 10, 1976 listed four additional references cited by the German examiner, and included copies of drawings from these four references.

On December 21, 1976, the U.S. attorney sent a telex to the German attorney with the following message:

Your letter of December 3 came without copies of listed U.M. 1957744, [**25] U.M. 1988249 [Geb. '249], and laid-open 1784497. Copies were received of [two other references] not mentioned in the letter. Please clarify.

The German attorney responded on December 22, 1976, as follows:

With our letter of December 3, 1976 we intentionally did not send you the following references U.M. 1,957,744 and U.M. 1,988,249 and 'OS' 1,784,497, from among those mentioned . . . as this was not deemed necessary.

[*1396] No further correspondence is of record. The U.S. attorney filed with the U.S. PTO a list of the references of which copies were sent with the December 3 and December 10 letters, along with the copies or drawings received, as required by PTO practice. The three references for which no copies were sent, including Geb. '249, were not listed.

Although the district court attributed culpable intent to the German attorney, this record does not show clear

and convincing evidence thereof. The German attorney included Geb. '249 on "the list of all the prior art meanwhile become known to the Applicants". The district court did not discuss whether the U.S. attorney was delinquent, and may have deemed it exculpatory that the U.S. attorney [**26] inquired of the German attorney as to why copies of three references were not provided, and received the reply that it "was not deemed necessary". We need not speculate as to how the German attorney may have intended and the U.S. attorney may have interpreted this statement. Our task is to review whether the district court clearly erred in its finding of culpable intent. *See FMC Corp. v. The Manitowoc Co.*, 835 F.2d 1411, 1415, 5 USPQ2d 1112, 1115 (Fed. Cir. 1987) ("To be guilty of inequitable conduct, one must have intended to act inequitably").

Of the three unfiled references on the German attorney's list, only Geb. '249 is at issue. Although the absence of further investigation by the U.S. attorney of the possible relevance of Geb. '249 is a factor to be considered by the court, the court may consider all the surrounding circumstances. We note, for example, that Geb. '249 was listed in the German priority document filed with the PTO: this does not support a conclusion of intentional withholding. Indeed, the record contains no evidence of deliberate concealment.

An applicant who knew or should have known of the art or information, and of its materiality, [**27] is not automatically precluded thereby from an effort to convince the fact finder that the failure to disclose was nonetheless not due to an intent to mislead the PTO. . . .

Id. at 1416, 5 USPQ2d at 1116.

We conclude that there is not clear and convincing evidence to support the district court's finding of a deliberate intent to conceal Geb. '249. *See id.* at 1415, 5 USPQ2d at 1115 ("one who alleges a 'failure to disclose' form of inequitable conduct must offer clear and convincing proof"). The district court's finding of the intent element of inequitable conduct was therefore clearly erroneous; nor did the evidence of record establish gross negligence of such gravity as to warrant the drawing therefrom of an inference of intent to deceive or mislead the PTO. We conclude that in these circumstances inequitable conduct has not been proved. The district court's judgment of unenforceability is reversed.

Infringement

The ruling of noninfringement flowed from the decision of invalidity and unenforceability, and was not otherwise discussed by the district court. Demaco's counsel told the court:

Perhaps I should start by saying [**28] there is no question as to infringement. If the patent is held valid and enforceable, all of these parties are infringers. . . . we make no bones about it. The patent has been copied. . . . the issue of infringement just simply isn't in this case we've conceded on that point.

On this basis, we reverse the finding of noninfringement, and remand for determination of remedy.

REVERSED AND REMANDED.

CONCUR BY:

ARCHER

CONCUR:

ARCHER, Circuit Judge, concurring.

I join the majority opinion except with respect to the majority's "Inequitable Conduct" analysis.

The German patent (Gebrauchsmuster), No. 1,988,249 (Geb.'249), in my view, fails to meet the threshold of materiality, even though a basis for rejection by the German examiner and by the U.S. examiner in the reexamination of the Barth '357 patent. It is, at best, merely cumulative of prior art [*1397] disclosed. Geb.'249 discloses an asymmetrical nine-sided paving stone having a single laying pattern, as shown in the majority opinion. The U.S. examiner cited Geb.'249 as showing "slab elements or paving modules being of a single piece of concrete consisting of a head portion and a stem portion." This much was shown by [**29] other prior art references which were before the U.S. examiner during prosecution of the Barth '357 patent. In reversing the German examiner's decision, the German Federal Patent Court stated that the

covering element according to [Geb.'249] . . . which also has a head and a stem, is neither symmetrically designed about a longitudinal axis nor about another axis, and already for this very reason it is not suitable for giving suggestions to the person skilled in the art through which the

features characterized in the claim and directed to a covering element which is symmetrical about a longitudinal axis could have been implied.

Claim 9 claims, *inter alia*, a "centrally symmetrically [sic] octagon" head and the head and stem "being mirror symmetrical about said longitudinal axis." Prior art references before the examiner during both the original examination of the Barth application and the reexamination proceeding disclosed paving stones or compa-

table elements having integral head and stem portions. Thus, even if the Geb.'249 stone had been symmetrical and of ten sides instead of nine, it would only be cumulative. *Litton Industrial Products, Inc. v. Solid State Systems Corp.*, 755 F.2d 158, 167, 225 USPQ 34, 40 (Fed. Cir. 1985). [**30] Consequently, while the shape of Geb.'249 may have been "interesting," as the district court noted, it hardly satisfied the "but it may have been" test for materiality as the district court held. Accordingly, it is unnecessary in my view to reach the intent question of the inequitable conduct inquiry.

ATTACHMENT 6

To Appeal Brief filed on September 20, 2006

Symbol Technologies, Inc. v. Opticon, Inc., 935 F.2d

1569, 19 U.S.P.Q.2d 1241 (Fed Cir. 1991).

in

U.S. Serial No. 10/800,796

LEXSEE 935 F2D 1569

**SYMBOL TECHNOLOGIES, INC., Plaintiff-Appellee, v. OPTICON, INC., and
OPTO ELECTRONICS, Defendants-Appellants**

No. 90-1409

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

*935 F.2d 1569; 1991 U.S. App. LEXIS 12233; 19 U.S.P.Q.2D (BNA) 1241; 33 Fed.
R. Evid. Serv. (Callaghan) 1381*

June 14, 1991, Decided

PRIOR HISTORY: [**1] Appealed from: U.S. District Court for the Southern District of New York; Judge Wood.

COUNSEL:

Arnold Sprung, Sprung Horn Kramer & Woods, of Tarrytown, New York, argued for Plaintiff-Appellee. With him on the brief were Nathaniel D. Kramer and Ira J. Schaefer.

Jeffrey A. Schwab, Abelman Frayne Rezac & Schwab, of New York, New York, argued for Defendants-Appellants. With him on the brief was Michael Aschen.

JUDGES:

Nies, Chief Judge, Newman, and Clevenger, Circuit Judges.

OPINION BY:

CLEVINGER

OPINION:

[*1571] CLEVINGER, Circuit Judge

Symbol Technologies, Inc., (Symbol) sued Opticon, Inc., and its Japanese parent Opto Electronics, (collectively hereinafter Opticon), in the United States District Court for the Southern District of New York for infringement of certain claims of United [*1572] States Patent Nos. 4,387,297 ('297 patent), 4,593,186 ('186 patent), and 4,409,470 ('470 patent).

Symbol alleged that Opticon's MSH-840, MSH-850 and MSH-860 devices were infringing. Opticon denied infringement and filed a counterclaim for a declaratory judgment that the '297 and '186 patents are invalid and

unenforceable. Following a non-jury trial, the District Court concluded that the '297 and '186 patents were not proved invalid or unenforceable, [**2] and found infringement. n1 *Symbol Technologies, Inc. v. Opticon, Inc.*, 17 U.S.P.Q.2d 1737, 1990 U.S. Dist. LEXIS 5186 (S.D.N.Y. 1990). The court entered a liability judgment for Symbol.

n1 The District Court found that (1) the MSH-840 device infringes (i) claims 1-3, 8, 11, 15, 20, 23 and 36-38 of the '297 patent, (ii) claims 1-8 and 11-15 of the '186 patent when used with the decoder with which it was designed to operate and (iii) claims 1-5, 27, 31, 33, 50-54 and 56-62 of the '470 patent; (2) the MSH-850 device infringes (i) claims 1-3, 8, 9, 11, 15, 17, 20, 23, and 36-38 of the '297 patent, (ii) claims 1-9 and 11-15 of the '186 patent when used with the decoder with which it was designed to operate; (3) the MSH-860 device infringes (i) claims 1-3, 5, 6, 8, 11, 15, 20, 21, 23, 36, and 37 of the '297 patent and (ii) claims 1-9 and 11-15 of the '186 patent when used with the decoder with which it was designed to operate.

Opticon appeals the judgment of the District Court. This Court has jurisdiction under 28 U.S.C. § 1292(c)(2) [**3] (1988) to entertain Opticon's appeal. Because no reversible error was committed, we affirm.

I. BACKGROUND

The patents relate to devices that employ lasers to read bar code symbols, and methods of their use. The application that issued as the '297 patent was filed on February 29, 1980. In the first official action, the examiner required restriction to one of seven species identified as Groups I - VII. The applicants elected Group I claims

directed to a light-weight laser scanning head, which matured into the '297 patent.

The '297 patent specification refers to two types of previously known laser scanning devices. The first type, often mounted in supermarket and other checkout counters, requires a user to bring the symbol-bearing object to the stationary scanner. Its usefulness is limited to decoding symbols on objects that can be brought to the device. The second type uses a wand or pen that emits a scanning laser beam. The user places the pen in physical contact with the object, then manually drags the pen across the symbol. This second type requires user training because successful decoding depends on pen angle, pressure, and speed of passage as the pen is dragged across the bar [**4] code. Multiple passes of the pen are often required to achieve a single reading. Moreover, the tips of pen scanners tend to scar the bar codes and are not useful on wax coated containers, such as milk cartons, on soft products, such as bagged potato chips, or on reflective aluminum cans.

In contrast, the invention claimed in the '297 patent is a portable, light-weight laser scanning head that operates without physical contact with the bar code. *See* Figure 1. In gun-like fashion, the user sights the bar code, unobstructed by the device, then depresses a trigger to initiate decoding. Each time the trigger is depressed, the hand-held device sweeps a scanning laser beam laterally across the bar code by use of mirrors. The examiner considered this "aim and shoot" feature to be a novel distinguishing characteristic of the claimed invention over the prior art. All of the asserted '297 patent claims depend on claim 1, reprinted in the Appendix, which in pertinent part claims the "aim and shoot" feature as:

- (c) miniature optic means . . . to permit the user to conveniently register the laser light beam on the symbol by sighting the symbol along a direct line of sight which does not pass [**5] through the housing;
- (d) miniature scanning means mounted in the light path and in the interior space of the housing for cyclically sweeping the laser light beam across the bar code symbol for reflection therefrom;

* * *

- (h) handle means for normally supporting the light-weight laser scanning head in a non-contacting relationship with the symbol during reading thereof; and
- [*1573] (i) manually actuatable trigger means on the housing for initiating read-

ing of the symbol each time the trigger means is manually actuated by the user.

[SEE FIGURE 1 IN ORIGINAL]

Before the '297 patent issued, the applicants filed a divisional application directed to the originally non-elected Group VI claims, described in the restriction as a "method" of scanning, sensing and decoding bar code symbols. Thereafter, the applicants filed a continuation of the divisional application, which eventually issued as the '186 patent. The '186 patent contains apparatus claims 1-10 and method claims 11-15, with the method claims closely corresponding to the original Group VI claims. The broadest asserted apparatus and method claims, reprinted in the Appendix, both require a "trigger" and "repetitively" scan [**6] "the directed laser beam across each symbol for reflection therefrom." Thus, the '186 patent claims a system that repetitively scans and senses a bar code symbol each time a user depresses the trigger. Each symbol is decoded from repetitive rather than single scans, thereby increasing the likelihood of achieving accurate decoding even for poorly printed symbols. In addition, claim 1 and claim 11 include limiting language for "determining a successful decoding of each symbol," and for "non-manually terminating the reading of each symbol upon the determination of the successful decoding thereof." *See* Appendix. Thus, the invented system alerts the user and automatically stops scanning when the symbol is decoded, permitting rapid and sequential decoding of multiple objects.

The same applicants claimed an advance over the invention of the '297 patent in an application filed on January 25, 1982, which later issued as the '470 patent. The '470 patent specification explains that, because the scanning laser beam of the invention [*1574] claimed in the '297 patent passes through the inside of the device, "a great deal of interior 'dead' space within the head" is required in order to accommodate [**7] the scanning beam.

In contrast, the '470 patent discloses a scanning head with a raised rear window that emits the laser beam over the outside top of the device rather than inside its housing. Claim 1 of the '470 patent, reprinted in the Appendix, includes:

- (g) window means mounted on the housing, and having a light-transmissive window at the rear region in close adjacent confronting relationship with the scanning means thereat, said window being configured and positioned in the light path of

said at least one swept beam to permit the latter to pass through the window and unobstructedly travel exteriorly of and past the front and intermediate body regions of the housing.

whereby the field of view of the swept beam is substantially independent of the predetermined width of the housing due to its exterior transmission outside of the front and intermediate body regions of the housing.

Thus, since the device no longer must accommodate the sweep width of the scanning beam, the invention allows a narrowing of the body of the device, with a corresponding reduction in overall size and weight.

II. INFRINGEMENT

Opticon's first contention on appeal is that Symbol presented insufficient [**8] evidence during its case-in-chief to establish a prima facie showing of infringement. Symbol, as the party asserting infringement, bore the burden of proof by a preponderance of the evidence. *Hughes Aircraft Co. v. United States*, 717 F.2d 1351, 1361, 219 U.S.P.Q. (BNA) 473, 480 (Fed. Cir. 1983).

To prove infringement, Symbol offered the expert testimony of Mr. Edward Barkan (Barkan), named as a co-inventor in each of the three patent applications. The court admitted into evidence charts and drawings used by Barkan to demonstrate infringement of the asserted claims, each of which contains "means plus function" limitations as permitted under 35 U.S.C. § 112 para. 6 (1988). The charts show each asserted claim broken down by limitation, with one or more numbers placed next to each limitation. Corresponding numbers identify various structural parts of the accused devices depicted in the drawings. Using the exhibits as a guide, Barkan stated that in his opinion each numbered claim limitation reproduced on the charts was met by the corresponding numbered structure of the device shown on the drawings. Furthermore, Barkan testified that his "understanding of the patent [**9] claims [was] based upon the claims, as well as the specifications, as well as statements made during the prosecution history."

Determination of patent infringement is a two-step process: "the meaning of the claims must be learned from a study of all relevant patent documents; and the claims must be applied to the accused structures." *Caterpillar Tractor Co. v. Berco, S.P.A.*, 714 F.2d 1110, 1114, 219 U.S.P.Q. (BNA) 185, 187 (Fed. Cir. 1983). Opticon contends that, under *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 934, 4 U.S.P.Q.2d (BNA)

1737, 1739 (Fed. Cir. 1987), cert. denied, 485 U.S. 961, 99 L. Ed. 2d 426, 108 S. Ct. 1226 (1988), a party asserting infringement of claims with "means plus function" limitations must demonstrate to the fact-finder how each structure in the accused device, asserted to meet a functional claim limitation, is the same as or equivalent to a corresponding structure disclosed in the specification. Opticon cites the following passage from *Pennwalt* for support:

Where the issue is raised, it is part of the ultimate burden of proof of the patent owner to establish, with respect to a claim limitation in means-plus-function [**10] form, that the structure in the accused device which performs that function is the same as or an equivalent of the structure disclosed in the specification.

Id.

In the circumstances of this case, however, Fed. R. Evid. 705 provides the answer to whether Symbol made a prima facie [*1575] showing of infringement. n2 At trial, Symbol suggested that the court receive the exhibits representing Barkan's expert testimony without foundation, thus relieving the court and Barkan of the need to "go through lengthy testimony explaining with each infringing device how he found that each element was infringed." Counsel for Opticon responded "I really have no objection except . . . that we have wanted to voir dire." After voir dire, Opticon failed to cross-examine Barkan on the issue that it now asserts fatally flaws the sufficiency of his testimony.

n2 Rule 705, "Disclosure of Facts or Data Underlying Expert Opinion," provides:

The expert may testify in terms of opinion or inference and give reasons therefor without prior disclosure of the underlying facts or data, unless the court requires otherwise. The expert may in any event be required to disclose the underlying facts or data on cross-examination.

-----End Footnotes-----

[**11]

By its express terms, § 112 para. 6 permits an element in a claim to be expressed as a means or step for performing a specified function. However, the scope of such a claim is not limitless, but is confined to structures expressly disclosed in the specification and corresponding equivalents. Thus, the statutory provision prevents an overly broad claim construction by requiring reference to the specification, and at the same time precludes an overly narrow construction that would restrict coverage solely to those means expressly disclosed in the specification. *Johnston v. IVAC Corp.*, 885 F.2d 1574, 1580, 12 U.S.P.Q.2d (BNA) 1382, 1386-87 (Fed. Cir. 1989) (statutory provision acts as restriction on claim scope); *Data Line Corp. v. Micro Technologies, Inc.*, 813 F.2d 1196, 1201, 1 U.S.P.Q.2d (BNA) 2052, 2055 (Fed. Cir. 1987) (statutory provision precludes a construction limited to structures expressly disclosed in specification); *D.M.I., Inc. v. Deere & Co.*, 755 F.2d 1570, 1574, 225 U.S.P.Q. (BNA) 236, 238 (Fed. Cir. 1985) (statutory provision requires that "limitation shall be construed to cover structure described [**12] in the specification and equivalents thereof" (emphasis in original)). In short, applying a claim drafted under § 112 para. 6 to an accused structure is not a simple task.

Opticon argues that Barkan must have misunderstood this task, because he testified on the ultimate issue of infringement without discussing in detail equivalency between the structures of the accused devices and the structures disclosed in the patent specifications. However, testimony on the ultimate issue of infringement is permissible in patent cases. *Snellman v. Ricoh Co.*, 862 F.2d 283, 287, 8 U.S.P.Q.2d (BNA) 1996, 2000 (Fed. Cir. 1988), cert. denied, 491 U.S. 910, 109 S. Ct. 3199, 105 L. Ed. 2d 707 (1989) ("although claim interpretation is a question of law, expert testimony is admissible . . . to give an opinion on the ultimate question of infringement" (citations omitted)); Fed. R. Evid. 704. The scope of literally infringing "equivalents" under § 112 para. 6 is a factual determination. *King Instrument Corp. v. Otari Corp.*, 767 F.2d 853, 862, 226 U.S.P.Q. (BNA) 402, 408 (Fed. Cir. 1985), cert. denied, 475 U.S. 1016, 89 L. Ed. 2d 312, 106 S. Ct. 1197 (1986). The responsibility for challenging [**13] the factual underpinnings of the testimony fell squarely on Opticon during cross-examination. See *Smith v. Ford Motor Co.*, 626 F.2d 784, 793 (10th Cir. 1980), cert. denied, 450 U.S. 918, 67 L. Ed. 2d 344, 101 S. Ct. 1363 (1981) ("the full burden of exploration of the facts and assumptions underlying the testimony of an expert witness [is] squarely on the shoulders of opposing counsel's cross-examination" (citation omitted)); see also *Bryan v. FMC Corp., John Bean Div.*, 566 F.2d 541, 545 (5th Cir. 1978) ("rule 705 shifts to the cross-examiner the burden of eliciting the bases of an expert witness' opinion"); *United States v. Santarpio*, 560 F.2d 448, 454-55 (1st Cir. 1977), cert.

denied sub nom., *Schepici v. United States*, 434 U.S. 984, 54 L. Ed. 2d 478, 98 S. Ct. 609 (1977) (under Rule 705, court was entitled to credit expert's conclusion even though expert did not describe and explain the relevance of factors upon which his opinion rested; defendant neither cross-examined on basis for opinion nor attempted to show its inadequacy); *C. Van Der Lely, N.V. v. F. Ili Maschio S.n.c.*, 221 U.S.P.Q. (BNA) 34, 41 (S.D. Ohio 1983), aff'd, 748 F.2d 1568 [*1576] (Fed. Cir. 1984) [**14] (under Rule 705, "cross-examination [is] the proper procedure for the defendant to challenge the accuracy of [the expert's] opinion"). Opticon failed to seize the opportunity, provided by the Rule, to demonstrate that Barkan's opinion testimony was factually incorrect.

Rule 705 functions to abbreviate trials by permitting opinion testimony without factual foundation. We see no reason why Rule 705 is not fully applicable to patent trials and opinion testimony on infringement of claims under § 112 para. 6. We have not directly addressed this issue, but have previously applied Rule 705 in a patent case on the issue of damages, stating that an expert need not "reveal the facts or data underlying his opinion . . . because [the defendant] did not cross-examine on this issue and the master did not require otherwise." *Studiosengesellschaft Kohle v. Dart Indus.*, 862 F.2d 1564, 1567, 9 U.S.P.Q.2d (BNA) 1273, 1277 (Fed. Cir. 1988). Moreover, the Federal Rules of Evidence are expressly applicable to all proceedings in the courts of the United States, which must include civil suits arising under Title 35. Fed. R. Evid. 101. Finally, the specific purpose behind Rule 705 is to [**15] avoid "complex and time consuming" testimony by permitting an expert to "state his opinion and reasons without first specifying the data upon which it is based." Fed. R. Evid. 705 advisory committee's note quoting Rule 4515, N.Y. CPLR (McKinney 1963). Patent cases, so often typified by lengthy testimony on complex technical issues, are particularly served by this purpose.

In short, Symbol was permitted to rest its prima facie case on Barkan's expert testimony, including charts, that the patents were infringed, and the District Court was free to accept or reject that evidence. Of course, by resting its case on summary testimony, Symbol was left exposed to a profound risk that Opticon, during its defense or cross-examination of Barkan, would demonstrate that the accused devices were non-infringing under a different and proper construction of the claims. Opticon willingly permitted Symbol to bear this risk, but chose not to expose Barkan's testimony to the glaring light of cross-examination on this issue. Having lost below, Opticon cannot here recoup for its failed litigation strategy. n3 In view of the legal effect of the expedited procedure, we must reject Opticon's contention [**16] that Symbol failed to present a prima facie case of infringement.

Since Opticon offers no argument that its products do not infringe on the facts, we need not review infringement itself.

n3 See 3 J. Weinstein & M. Berger, Weinstein's Evidence para. 705[01], p. 705-11 (1987):

Obviously, if further testimony would only solidify the expert's conclusion, his adversary will refrain from further questioning. But if he concludes that the expert has omitted pertinent facts in arriving at his opinion, or has misconstrued them, or is accepting disputed facts as true, or is basing his opinion on someone else's opinion which is in conflict with the established facts, the attorney will wish to probe into the expert's premises.

III. VALIDITY

A. Obviousness

Opticon challenges the District Court's conclusion that the inventions of the '297 and '186 patents were not proved invalid for obviousness under 35 U.S.C. § 103 (1988). n4 We must answer whether "the prior art made obvious the invention as a whole for which patentability [**17] is claimed." *Hartness Int'l Inc. v. Simplimatic Eng'g Co.*, 819 F.2d 1100, 1108, 2 U.S.P.Q.2d (BNA) 1826, 1832 (Fed. Cir. 1987). We do not "pick and choose among the individual elements of assorted prior art references to recreate the claimed invention," but rather, we look for "some teaching or suggestion in the references to support their use in the particular claimed combination." *Smithkline Diagnostics, Inc. v. Helena Laboratories Corp.*, 859 F.2d 878, 887, 8 U.S.P.Q.2d (BNA) 1468, 1475 (Fed. Cir. 1988).

n4 The District Court focused on the obviousness of the invention claimed in the '297 patent. Opticon offers no separate argument on the obviousness under § 103 of the invention claimed in the '186 patent. We therefore limit our review to the obviousness *vel non* of the invention of the '297 patent.

[*1577] The District Court found that the prior art consisted of U.S. Patent No. 4,251,798 (the '798 patent), which describes the Laserchek, and references which describe the Laserscan, [**18] the Verifier 315, the Monitor 101, and the Carton Counter. We review here the teachings of that art.

The '798 patent is prior art under 35 U.S.C. § 102(e) (1988). The '798 patent claims a portable laser scanning head that detects and decodes laser beams reflected from bar codes. The reference discloses a device that can read in a non-contact position:

This 'depth of field' feature permits a user to scan bar code symbols imprinted both on a flat surface and on a curved surface merely by moving the head towards a position anywhere within 2" of the symbol.

'798 patent, col. 5, line 66 - col. 6, line 6.

During prosecution of the '297 patent, the '798 patent was the basis for discussions about the permissible scope of the '297 patent claims. Indeed, the examiner originally rejected the claimed invention as obvious in light of the disclosure in the '798 patent. Following an interview with the examiner, the applicants amended the claims to include the handle, trigger and sighting means that appear in claim 1 and are quoted above. The examiner allowed the claims in view of the amendment. The District Court agreed with the examiner's conclusion that the addition of the handle, trigger [**19] and sighting means (described by the District Court as the "aim and shoot" feature) to the self-scanning means distinguished the invention claimed in the '297 patent from the disclosure in the '798 patent.

The Laserchek device, a Symbol product, is described in the '798 patent. Following a demonstration of the device at trial, the District Court found that the Laserchek was a bar code verification device, had no trigger, normally blocked the user's view of the bar code during use, and could not be used in the "aim and shoot" fashion.

The Laserscan was merely a modified version of the Laserchek. The Laserscan consisted of the Laserchek scanning head attached to a console in turn attached to a computer. The District Court found that the Laserscan was not capable of functioning in "aim and shoot" mode because the device had no trigger and obscured the bar code during use.

The Verifier 315 was a bar code reader designed to be used with its feet resting on a surface and its front reading "snout" positioned above the bar code by a small, fixed distance. The District Court found that the device blocked the user's view of the bar code during use and had no trigger.

The Monitor 101 was developed [**20] in the mid-1970's to verify the accuracy of bar codes as they are printed. During printing, the bar codes pass underneath the device, which is fixed above the printing press. The District Court found that the Monitor 101 was neither hand held nor capable of operating in "aim and shoot" fashion.

The Carton Counter counted cartons and was not a bar code reader. However, the device had a trigger, not to initiate decoding of a bar code, but to reset the counter to zero. A brochure describing the Carton Counter was before the examiner and found not to be pertinent. The District Court, finding that the carton counter "is not self-scanning; rather, it must be dragged over the carton edges," concluded that the device "lacks any disclosure, recognition, or teaching of an aim and shoot device." 17 U.S.P.Q.2d at 1746.

The District Court thus concluded that the invention would not have been obvious in light of the prior art because the considered references did not disclose or suggest the "aim and shoot" feature claimed in parts (c), (d), (h) and (i) of claim 1 of the '297 patent. We agree. Here the very difference between the claims and the considered art is the "aim and shoot" feature [**21] found critical to the patentability of the invention. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 U.S.P.Q. (BNA) 459, 467, 15 L. Ed. 2d 545, 86 S. Ct. 684 (1966) (§ 103 requires consideration, *inter alia*, of differences between prior art and claimed invention as a whole). Thus, a person of ordinary skill in the art, having all of the [*1578] teachings of the considered references before him, would have found no "teaching or suggestion in the references" of the invention claimed in the '297 patent. *Smithkline Diagnostics*, 859 F.2d at 887, 8 U.S.P.Q.2d at 1475.

However, in reaching its conclusion, the District Court excluded sketches and tentative specifications relating to a device known as the X-Scanner, on the theory that "'prior art' in an obviousness determination [] must . . . be enabling, that is, disclose the disseminated subject matter to the public, in a manner such that one skilled in the art could make and operate such a device." 17 U.S.P.Q.2d at 1740. While a reference must enable someone to practice the invention in order to anticipate under § 102(b), a non-enabling reference may qualify as prior art for the purpose of determining obviousness [**22] under § 103. *Reading & Bates Constr. Co. v. Baker Energy Resources Corp.*, 748 F.2d 645, 652, 223

U.S.P.Q. (BNA) 1168, 1173 (Fed. Cir. 1984) (reference that lacks enabling disclosure is not anticipating, but "itself may qualify as a prior art reference under § 103, but only for what is disclosed in it" (emphasis in original)); see *Beckman Instruments, Inc. v. LKB Produkter AB*, 892 F.2d 1547, 1551, 13 U.S.P.Q.2d (BNA) 1301, 1304 (Fed. Cir. 1989) ("even if a reference discloses an inoperative device, it is prior art for all that it teaches"). Undisputed evidence demonstrated that the sketches and tentative specifications, together known as the X-Scanner reference, were publicly available more than one year before the effective filing date. The District Court's finding to the contrary is clearly erroneous. While the District Court clearly erred in excluding the X-Scanner sketches and tentative specifications from the prior art for the purpose of evaluating obviousness under § 103, that error did not preclude the District Court from alternatively reaching its factual conclusions regarding those materials. The District Court specifically stated, [**23] in pertinent part, that "the 'X-Scanner' had to be dragged across the symbol rather than being aimed and shot." 17 U.S.P.Q.2d at 1747.

The X-Scanner reference discloses a 2 lb. laser scanning head for reading bar code symbols at a maximum working range of 4" from the bar code. Thus, like the '798 patent, the reference discloses a device capable of reading in a non-contact position. The disclosed device has a trigger, and may be used in either "portable mode" or "permanent mount mode." When operated in permanent mount mode, the device scans continuously from a fixed position above the bar code, much like the Verifier 315 already considered. The reference explains that the device, when operated in portable mode, has a "0-2 seconds scan duration" which is activated by a "trigger." In both modes, the laser beam puts out an "X" pattern and the "symbol must move across [the scanning] field, or vice versa."

In support of its conclusion that the X-Scanner had to be dragged across the symbol rather than aimed and shot, the District Court cited the expert testimony of Symbol's expert witness, Mr. Swartz. Swartz testified that the X-Scanner's "mode of use" was sufficiently different [**24] from the invention of the '297 patent that it was "not a device that is used in a shoot mode, [] because it is, it creates an X-pattern as shown." Therefore, to obtain a reading, "you cannot do it stationary, you must have relative motion [between the symbol and device]." Swartz also stated "you would have to move [the scan head], you could not use it in aim and shoot mode." Opticon's evidence to the contrary failed to persuade the District Court, and Opticon has failed to persuade us that the District Court committed reversible error in crediting Symbol's evidence on this point.

The obviousness inquiry conducted by the District Court correctly included review of the evidence offered on the objective indicia of nonobviousness, *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538, 218 U.S.P.Q. (BNA) 871, 879 (Fed. Cir. 1983), which included the failure of others to develop the claimed invention and its commercial success. Nonobviousness is suggested by the failure of others to "find a solution to the problem which the patent[s] in question purport[] to solve. Such evidence [*1579] shows indirectly the presence of a significant defect [in the prior art], while serving [**25] as a simulated laboratory test of the obviousness of the solution to a skilled artisan." Note, *Subtests of "Nonobviousness": A Nontechnical Approach to Patent Validity*, 112 U. Pa. L. Rev. 1169, 1173 (1964). On this issue, the District Court found that Opticon's own expert witness, Mr. Collins, was "closely involved with the bar code industry since its inception and [] never conceived or developed an aim and shoot scanning device." 17 U.S.P.Q.2d at 1747. The court further found that, despite years of effort, Opticon's technical witness, Mr. Knowles, was "never able to develop a scanner with the aim and shoot feature of the patents in suit." *Id.* Furthermore, as found by the District Court, Symbol's "aim and shoot" scanners have enjoyed tremendous commercial success, with about 200,000 devices sold for over \$150,000,000 as of the time of trial. These findings are not challenged by Opticon.

In short, under the evidence that was put forward by Symbol and properly accepted by the court, the omitted reference adds nothing to the scope of the already considered prior art except a trigger in a bar code reader. This addition is minor, because the Carton Counter already [**26] discloses a trigger, although in a device for counting cartons. When the X-Scanner reference is considered with all the other references, the prior art as a whole still lacks a disclosure or suggestion of the "aim and shoot" feature, in which a laser beam sweeps laterally across the bar code while the hand-held device is held stationary and the target can be viewed.

We thus conclude that, even when the X-Scanner reference is included in the prior art, Opticon has not met its burden of proving that the inventions of the '297 and '186 patents would have been obvious under § 103. The District Court's error in alternatively excluding the X-Scanner reference from the prior art was therefore harmless.

B. Double Patenting

Opticon challenges the District Court's conclusion that the '186 patent was not invalid for obviousness-type double patenting over the '297 patent. After the examiner required restriction during prosecution of the '297 patent, the applicants filed a divisional application containing

method claims drawn to the invention of the originally non-elected Group VI claims. A continuation of the divisional containing both the old method and new apparatus claims eventually [**27] issued as the '186 patent.

With regard to double patenting, we recently explained that 35 U.S.C. § 121 (1988) n5 will not apply to remove the parent as a reference where the principle of consonance is violated:

Consonance requires that the line of demarcation between the "independent and distinct inventions" that prompted the restriction requirement be maintained. Though the claims may be amended, they must not be so amended as to bring them back over the line imposed in the restriction requirement. Where that line is crossed the prohibition of the third sentence of Section 121 does not apply.

Gerber Garment Technology, Inc. v. Lectra Systems, Inc., 916 F.2d 683, 688, 16 U.S.P.Q.2d (BNA) 1436, 1440 (Fed. Cir. 1990).

n5 Section 121 provides, in relevant part:

A patent issuing on an application with respect to which a requirement for restriction under this section has been made, or on an application filed as a result of such requirement, shall not be used as a reference either in the Patent and Trademark Office or in the courts against a divisional application or against the original application or any patent issued on either of them, if the divisional application is filed before the issuance of the patent on the other application.

[**28]

The corollary to this Court's statement in *Gerber Garment* is that new or amended claims in a divisional application are entitled to the benefit of § 121 if the claims do not cross the line of demarcation drawn around the invention elected in the restriction requirement. If that line is crossed, the issue is whether the invention

claimed in the '186 patent would have been obvious in light of the invention claimed in the '297 patent.

[*1580] Opticon contends, as it did before the trial court, that the appearance of "a whole *new* group of apparatus claims along with the method claims" in the '186 patent proves that the claims "asserted against Opticon are drawn to the elected species of the '297 patent and not the species upon which the divisional was filed." We read Opticon's bare assertions in its opening brief, without record citation, to allege that because the Group VI invention was described as a "method" in the restriction requirement, the added *apparatus* claims fail to comply with the requirement. The District Court had before it the declaration of Mr. Berger, which fully supports a conclusion that both the method and apparatus claims are directed to the Group VI invention. [**29] Berger stated that the Group VI invention is a system of scanner plus decoder, with a means for stopping the scanner after the symbol is successfully decoded. Therefore, whether method or apparatus, all the '186 patent claims are drawn to that system. Berger further asserted that in the electronic arts, the Patent and Trademark Office (PTO) has not restricted between claims to an apparatus and to a method of using the apparatus. Cf. *Studiengesellschaft Kohle v. Northern Petrochemical Co.*, 784 F.2d 351, 354, 228 U.S.P.Q. (BNA) 837, 840 (Fed. Cir. 1986), cert. dismissed, 478 U.S. 1028, 92 L. Ed. 2d 763, 106 S. Ct. 3343 (1986) (chemical composition claims defined invention different from process claims). In short, Berger explained that the word "method" in the description of Group VI during restriction did not mean that the claims were limited to a method, but was merely a short-hand description of the invented *system*. For support, Berger stated that the examiner collectively characterized the method and apparatus claims of another non-elected group, Group IV, as a "method." Finally, Berger noted that the examiner's statement that "the Group I invention does not require [**30] the particular *apparatus* of Group . . . VI," (emphasis added) cannot be reconciled with Opticon's argument that the invention of Group VI could only be expressed as a method. In light of this testimony, we cannot agree that a breach of the restriction requirement occurred. The safeguard of § 121 therefore applies in this case, and the '297 patent is not available as a reference against the '186 patent.

Furthermore, even if there had been a breach of the restriction requirement, we would reject Opticon's argument on the ultimate obviousness-type double patenting inquiry: whether the claims of the '186 patent are patently distinct from the claims of the '297 patent. See *In re Borah*, 53 C.C.P.A. 800, 354 F.2d 1009, 1017, 148 U.S.P.Q. (BNA) 213, 220 (CCPA 1966) (crux of obviousness-type double patenting inquiry lies in comparison of claims); see also *Gerber Garment*, 916 F.2d at 686,

16 U.S.P.Q.2d at 1438 (judicially created doctrine of obviousness-type double patenting applies when two applications or patents, not drawn to precisely the same invention, are "drawn to inventions so very much alike as to render one obvious in view of the other and to [**31] effectively extend the life of the patent that would have the earlier of the two issue dates").

Double patenting is an affirmative defense. *Studiengesellschaft Kohle v. Northern Petrochemical Co.*, 784 F.2d at 352, 228 U.S.P.Q. at 838. Opticon was therefore required to prove double patenting by clear and convincing evidence, a heavy and unshifting burden. *RCA Corp. v. Applied Digital Data Sys., Inc.*, 730 F.2d 1440, 1444, 221 U.S.P.Q. (BNA) 385, 387 (Fed. Cir. 1984) (invalidity requires clear and convincing proof, and burden remains at all times with patent challenger); *Carman Indus., Inc. v. Wahl*, 724 F.2d 932, 940, 220 U.S.P.Q. (BNA) 481, 487 (Fed. Cir. 1983) ("there is a heavy burden of proof on one seeking to show double patenting").

Opticon's conclusory allegation that the District Court's decision on double patenting was in error, without citation to the record, the patents or the testimony of the witnesses, does not support reversal. See *In re Mulder*, 716 F.2d 1542, 1550, 219 U.S.P.Q. (BNA) 189, 197 (Fed. Cir. 1983) (to obtain reversal, appellant must clearly explain why decision below [**32] is wrong). As a court of review, it is not our function to search the voluminous trial record, prosecution histories, and patents to fashion a substantive [*1581] basis for Opticon's argument. See *Preemption Devices, Inc. v. Minnesota Mining & Mfg. Co.*, 732 F.2d 903, 905, 221 U.S.P.Q. (BNA) 841, 842 (Fed. Cir. 1984) (as appellate court, it is not our function to search the record in order to reach a conclusion favoring appellant).

Nevertheless, even a brief review of the '297 patent reveals that all of the asserted claims are directed to a laser self-scanning head with a "trigger," a "handle," and means for "sighting the symbol along a direct line of sight." In contrast, the asserted claims of the '186 patent recite additional features. Although the claims of the '186 patent cover a laser scanning system that includes a portable laser scanning head, the system also includes means for *repetitively* self scanning a bar code symbol until it is decoded. Furthermore, when successful decoding has been achieved, the system alerts the user and automatically stops scanning. The repetitive scan feature adds the advantage of increasing the accuracy of decoding. Claim 8 includes [**33] a further feature of terminating the repetitive scan if no successful decode is achieved within a set time period.

Opticon contends in its reply brief that the automatic termination feature is merely an obvious addition to the invention claimed in the '297 patent, because its expert

testified that this feature "is a software program, essentially a software program, or firmware program, if you go back far enough in time." The mere reference to "a software program" does not demonstrate that the program would have been obvious or that its addition to the invention of the '297 patent would have been obvious.

Furthermore, the policy behind the double patenting doctrine, the prevention of unlawful extension of the patent grant, does not favor Opticon's position. Although the '297 patent will expire before the '186 patent, the '186 patent will not "extend" the property right conveyed in the '297 patent. See *Gerber Garment*, 916 F.2d at 686, 16 U.S.P.Q.2d at 1438 (obviousness-type double patenting occurs when a second patent would "effectively extend the life of the patent that would have the earlier of the two issue dates"). Since the '186 patent is not infringed [**34] by practice of the invention claimed in the '297 patent, the world will be free to use the invention of the '297 patent once it expires. See *In re Kaplan*, 789 F.2d 1574, 1578, 229 U.S.P.Q. (BNA) 678, 681-82 (Fed. Cir. 1986) (no double patenting found where no extension of patent right is possible because when the first to issue patent expires, "the world will be free to use" the first patented invention so long as the second patented invention is not used in it).

Finally, Opticon contends that the judgment of the District Court should be reversed for failure to state findings of fact under Fed. R. Civ. P. 52(a). On appeal, Opticon raises the issue of consonance. As this Court explained in *Gerber Garment*, "the presence or absence of consonance will necessarily depend upon analysis of the involved claims," 916 F.2d at 688, 16 U.S.P.Q.2d at 1441, which are construed as a matter of law. Cf. *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1138 n.3, 227 U.S.P.Q. (BNA) 543, 547 n.3 (Fed. Cir. 1985) ("Under this court's precedent substantial identity between claims, a matter of claim interpretation, is a question [**35] of law."). In connection with construing claims, we are free to examine the prosecution history on appeal even where the trial court erroneously fails to consider it. See *Lemelson v. United States*, 752 F.2d 1538, 1550, 224 U.S.P.Q. (BNA) 526, 532-33 (Fed. Cir. 1985). This is particularly so where, as here, there are no underlying findings of fact required for such construction. Because we have concluded that the claims of the '186 patent are within the subject matter of Group VI as a matter of law, the absence of Rule 52(a) findings of fact on this issue is not reversible error.

We thus conclude that Opticon has failed to demonstrate that the District Court erred in finding that no claim in the '186 patent was proved invalid for double patenting.

IV. ENFORCEABILITY

Opticon challenges the District Court's conclusion that neither the '297 patent [*1582] nor the '186 patent are unenforceable because of inequitable conduct during prosecution. Opticon reiterates its argument, considered and rejected below, that Symbol fraudulently withheld information from the examiner concerning the Verifier 315 and the Laserscan during prosecution of the '297 and '186 patents.

Opticon asserts [**36] that the District Court erroneously failed to consider references that Symbol "should have known" were material, citing *FMC Corp. v. Manitowoc Co.*, 835 F.2d 1411, 1415, 5 U.S.P.Q.2d (BNA) 1112, 1116 (Fed. Cir. 1987). However, we have repeatedly rejected the simple negligence standard that Opticon urges us to adopt. See, e.g., *Jaskiewicz v. Mossinghoff*, 822 F.2d 1053, 1058, 3 U.S.P.Q.2d (BNA) 1294, 1299 (Fed. Cir. 1987) ("mere negligence is not sufficient to infer fraud or dishonesty"). Moreover, even a finding of gross negligence:

does not of itself justify an inference of intent to deceive; the involved conduct, viewed in light of all the evidence, including evidence indicative of good faith, must indicate sufficient culpability to require a finding of intent to deceive.

Kingsdown Medical Consultants v. Hollister Inc., 863 F.2d 867, 876, 9 U.S.P.Q.2d (BNA) 1384, 1392 (Fed. Cir. 1988), cert. denied, 490 U.S. 1067, 104 L. Ed. 2d 633, 109 S. Ct. 2068 (1989).

Opticon asserts that a flyer submitted by Symbol during reexamination depicted an operational Verifier 315, and that Symbol deceived the PTO by indicating that the flyer [**37] depicted only an empty shell or housing. The record is replete with evidence supporting a conclusion that, at the very least, Symbol possessed a good faith belief that the photograph in the flyer indeed depicted only an empty shell of an inoperable device, a belief to which the District Court, in the final analysis, itself concurred. Opticon further argues that Symbol improperly withheld from the examiner information relating to the Laserscan device during prosecution of its patents, but as noted *supra*, that device was a modified version of the Laserchek device disclosed in the '798 patent. We conclude that the reference was merely cumulative to the teachings of the '798 patent, imparting no obligation to disclose. See *J.P. Stevens & Co. v. Lex Tex, Ltd.*, 747 F.2d 1553, 223 U.S.P.Q. (BNA) 1089, 1092 (Fed. Cir. 1984), cert. denied, 474 U.S. 822, 88 L. Ed. 2d 60, 106 S.

Ct. 73 (1985) ("[a] reference that would have been merely cumulative is not material").

We find no abuse of discretion in the District Court's conclusion that the '297 and '186 patents were not proved unenforceable for inequitable conduct during prosecution.

V. CONCLUSION

Among other issues, Opticon alleges [**38] that the sparseness of the District Court's Rule 52 findings, particularly on infringement and double patenting, preclude effective appellate review. Our opinion amply demonstrates the absence of merit in that allegation. Having duly considered and rejected each of Opticon's other arguments, we affirm the judgment of the District Court.

AFFIRMED.

APPENDIX

The '297 Patent

1. In a laser scanning system for reading bar code symbols, a light-weight easy-to-manipulate laser scanning head normally supportable only by a user throughout the reading of the symbols, comprising:

(a) a housing having wall portions bounding an outlet port and bounding an interior space whose volume measures less than a value which is on the order of 100 cubic inches;

(b) a light source mounted in the interior space of the housing for generating a laser light beam;

(c) miniature optic means mounted in the interior space of the housing for directing the laser light beam along a light path through the outlet port and towards a bar code symbol which is located exteriorly of the housing by a distance sufficient to permit the user to conveniently register the laser light beam on the symbol by sighting the symbol [**39] along a direct line of sight which does not pass through the housing;

[*1583] (d) miniature scanning means mounted in the light path and in the interior space of the housing for cyclically sweeping the laser light beam across the bar code symbol for reflection therefrom;

(e) miniature sensor means mounted in the interior space of the housing for detecting the intensity of light reflected from the bar code symbol, and for generating an electrical signal indicative of the detected intensity of the reflected light;

(f) miniature signal processing means mounted in the interior space of the housing for processing the electrical signal to generate therefrom data descriptive of the bar code symbol;

(g) all of said light source, optic means, sensor means and signal processing means together with said housing comprising the light-weight laser scanning head whose total weight measures less than a value which is on the order of two pounds;

(h) handle means for normally supporting the light-weight laser scanning head in non-contacting relationship with the symbol during reading thereof; and

(i) manually actuatable trigger means on the housing for initiating reading of the symbol each time the trigger [**40] means is manually actuated by the user.

The '186 Patent

1. A laser scanning system for reading bar code symbols, each in its respective turn, comprising:

(a) a light-weight, hand-held head normally supportable by a user in a normally non-contacting relationship with the symbols during reading thereof, said head including therein

(i) means for generating a laser beam, and for directing the same along a light path through an outlet port of the head to each symbol,

(ii) scanning means for repetitively scanning the directed laser beam across each symbol for reflection therefrom,

(iii) sensor means for detecting the variable intensity of each scanned laser beam reflected from each symbol, and for generating an electrical signal indicative of the detected intensity for each symbol, and

(iv) signal processing means for processing each electrical signal, and for generating a processed electrical signal for each symbol;

(b) decoding means operatively associated with the signal processing means, for decoding the processed signal for each symbol to be read;

(c) manually actuatable trigger means on the head and operatively associated with the decoding means, for initiating reading of each [**41] symbol upon each manual actuation of the trigger means from one state to another state by the user; and

(d) means operatively associated with the decoding means, for determining a successful decoding of each symbol, and for non-manually terminating the reading of each symbol upon the determination of the successful decoding thereof.

11. A method of successively sensing and reading bar code symbols, each in its respective turn, comprising the steps of:

(a) generating a laser beam, and directing the same along a light path to each symbol;

(b) repetitively scanning the directed laser beam across each symbol for reflection therefrom;

(c) detecting the variable intensity of each scanned laser beam reflected from each symbol, and generating an electrical signal indicative of the detected intensity for each symbol;

(d) processing each electrical signal, and generating a processed electrical signal for each symbol;

(e) performing steps (a), (b), (c) and (d) in a lightweight, hand-held head, and normally supporting the same by a user in a normally non-contacting relationship with the symbols during reading thereof;

(f) decoding the processed signal for each symbol to be read;

(g) initiating [**42] reading of each symbol upon each manual actuation from one state [*1584] to another state of a trigger by the user; and

(h) determining a successful decoding of each symbol, and non-manually terminating the reading of each symbol upon the determination of the successful decoding thereof.

The '470 Patent

1. In a scanning system for reading bar code symbols, a scanning head comprising:

(a) a housing having an elongated body portion including a front region, a rear region, and an intermediate body region extending between the front and rear regions, and having side walls spaced transversely apart of each other by a predetermined width;

(b) light source means mounted within the housing, for generating an incident light beam;

(c) optic means mounted within the housing, for directing the incident beam along a light path towards a reference plane located exteriorly of the housing in the vicinity of the front region thereof, and towards a bar code symbol located in the vicinity of the reference plane to thereby generate a reflected light beam which is directed along a light path away from the reference plane and back towards the housing;

(d) scanning means mounted within the housing at the rear [**43] region thereof, for sweeping at least one of said beams over a field of view across the bar code symbol;

(e) sensor means mounted within the housing, for detecting the light intensity in the reflected beam over a field of view across the bar code symbol, and for generating an electrical signal indicative of the detected light intensity;

(f) signal processing means mounted within the housing, for processing the electrical signal to generate therefrom data descriptive of the bar code symbol; and

(g) window means mounted on the housing, and having a light-transmissive window at the rear region in close adjacent confronting relationship with the scanning means thereat, said window being configured and positioned in the light path of said at least one swept beam to permit the latter to pass through the window and unobstructedly travel exteriorly of and past the front and intermediate body regions of the housing,

whereby the field of view of the swept beam is substantially independent of the predetermined width of the housing due to its exterior transmission outside of the front and intermediate body regions of the housing.